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ORIGINAL ARTICLES.

THE IMMEDIATE REPAIR OF THE PELVIC FLOOR AND PERINEUM.¹

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WE may for clinical purposes accept the division of the pelvic floor into the anterior and posterior segments. Lacerations of the anterior segment are not infrequent in proportion to those of the posterior segment, occurring in about the ratio of one to three.

The attention of the obstetrician is usually drawn to this accident by the occurrence of hemorrhage. When the uterus is well contracted, when inspection of the cervix reveals no laceration with bleeding, and when torn vessels in the posterior segment of the pelvic floor are not bleeding, persistent hemorrhage is caused by a laceration of the vulva or anterior segment of the pelvic floor. Upon inspection, a positive diagnosis is readily made, when such lacerations are detected extending into one or both sulci, externally near the urethra or internally behind the symphysis pubis. The detection of these injuries high up upon the anterior vaginal wall behind the symphysis may be difficult. Following the bleeding which accompanies such tears, the operator will come upon the source of the loss of blood. In extreme cases these lacerations may threaten the urethra, and may be complicated by tears in the veins in the vulva from which severe hemorrhages may occur.

The treatment of this condition may be expectant or by *serre-fines* or by suture. Where infection is absent, small lacerations in the anterior segment will heal without apparent injury. If such lacerations are of considerable extent, the important fascia of the pelvis will be torn and prolapse and dislocation of the urethra and vaginal wall will result. The treatment by *serre-fines* is unsatisfactory and has been employed chiefly in foreign hospitals. The primary closure of such injuries by fine or medium-sized chromicized catgut under antiseptic precautions gives satisfactory results. With the patient in proper position and with good light, there is rarely difficulty in closing these tears. We must be careful, if the tear extends near the urethra, to avoid injury by suture. Where extensive lacerations high up occur, it is often impossible completely and accurately to close the entire laceration. One or two sutures of medium-sized catgut buried deeply enough to include the fascia will be of great service in

preventing prolapse. While applying sutures, if the operator is annoyed by oozing from the cervix, uterus or pelvic floor, the vagina may be temporarily tamponed with gauze. Where the laceration extends near the urethra, a sound or catheter may be placed with advantage as a guide to the passage of sutures.

Lacerations of the posterior segment of the pelvic floor naturally divide themselves into tears of the pelvic floor and those of the perineum. The diagnosis of perineal tears is readily made by inspection, but the recognition of injuries to the pelvic floor requires especial care in exposing the deeper tissues. Where injuries are severe, blood may clot in deep tears of the pelvic floor, giving to the examining finger the sensation that the vaginal wall is intact. To make a thorough examination and diagnosis, the patient must be placed upon the back or side at the edge of a bed or table, the labia separated and the pelvic floor raised for inspection. This may be accomplished by the use of tenacula, or, more conveniently, by placing the longest finger of one hand covered by a rubber glove in the rectum and raising the pelvic floor by this finger. The other hand may use sponges and antiseptic solution, removing accumulated blood and exposing the full extent of the tear. Such injuries are rarely accompanied by considerable bleeding, as the vessels, if torn, retract readily. The extent and importance of lacerations of the pelvic floor must be estimated by the presence or absence of injuries to the deep fascia and the sphincter of the bowel. By thoroughly exploring the parts, the operator will be able to detect the extent of these lacerations.

Lacerations of the posterior segment may be closed immediately or after some delay. If the tear be considerable and the condition of the patient bad, the operator may wisely delay such repair for twenty-four to thirty-six hours. It must be remembered that we cannot accurately foretell the length of time required to repair lacerations. If the patient is greatly exhausted and the conditions are unfavorable for rapid work, it will be much wiser to delay until the patient has obtained rest and the conditions are favorable.

No considerable tear of the pelvic floor can be satisfactorily repaired with the patient upon a low bed and in a poor light. The patient should be placed upon a table or high bed in a good light, and sufficient assistance obtained to give the patient the care necessary for an important surgical operation. Partial or complete anesthesia is often necessary, and even if such be not employed in the beginning, it may be required before the end of the operation.

¹ Read before the Obstetrical Society of Philadelphia, October 6, 1904.

Sterile instruments, sterile gauze and suture material, antiseptic solutions, stimulants for hypodermic use, sterile appliances for the operator and at least one thoroughly competent and experienced nurse are required. The patient's limbs may be supported by assistants, or more conveniently by a sheet or sling passed beneath the neck, over the shoulders and tied about each leg on the outer side above the knee. If this be properly applied, the limbs are well retracted, the knees and thighs rotated outward and the patient placed in the most convenient posture for operation.

The most important stitches in closing lacerations of the pelvic floor are those placed at the highest points in the tears in the sulci. Considerable difficulty may be experienced in placing these stitches, and a fully curved needle is usually required to pass them. They may be placed one-eighth of an inch from the upper end of the tear, and should extend sufficiently deeply to pass through the connective tissue and fascia lying beneath the mucous membrane of the vaginal wall. After the first, stitches may be placed one quarter of an inch apart until the pelvic floor has been brought together and evidently raised toward its original position. At this point, the operator may with advantage turn his attention to the tissues near the sphincter of the bowel. If the muscle has been torn, it should be brought together by one or two fine catgut buried stitches. Where the muscular tear is extensive, fine catgut may be used for the muscle only. In all cases, muscle and connective tissue should be brought together by a firm and carefully applied stitch. There is no objection to using several stitches, provided the catgut be not too large and the stitches be properly placed.

Next comes the repair of the perineum, beginning nearest the anus and bringing together the skin edges and underlying fascia with silkworm-gut stitches, taking a considerable portion of tissue but without tension. The perineum should be closed up to the point where the posterior vaginal wall begins. No effort should be made to repair the fourchette, as bringing together the tissues in this region too closely will produce a pocket favoring the retention of lochia. When the perineum has been closed, a few stitches may be required in the lower portion of the pelvic floor. These should be of catgut and complete the repair. In this operation a perfect result may not be obtained from one of several errors in its performance. If the pelvic floor sutures are continued upon the perineum, the posterior wall of the vagina will be brought downward and a prolapse of the vaginal mucous membrane will result. If stitches are drawn tightly, especially those in the perineum, they will cut. If sufficient tissue be not taken in stitches, a superficial union only may occur.

In complete tears, the rectum may first be closed by continuous suture of No. 1 chrom-

icized catgut prepared to last ten days, the stitches passed into the connective tissue, turning the mucous membrane into the bowel. A careful approximation will turn but little mucous membrane into the intestine and secure a good application for the stitches. The fascia and sphincter muscle of the bowel may then be accurately closed and then the pelvic floor and perineum as in an incomplete tear.

Several sorts of suture material are in use for this operation. Chromicized catgut prepared to last ten days, No. 2, has given good results in the sulci of the pelvic floor and where but one stitch was required in the fascia and muscle of the sphincter of the bowel. For closing the anterior segment of the pelvic floor and the rectum, No. 1 catgut of the same sort has been useful. In the skin perineum, silkworm gut has given satisfaction; occasionally two weeks catgut chromicized has given good results with great comfort to the patient. Sutures may be tied or shot, silkworm-gut sutures having the ends left long and tied together to prevent irritation. From its ready adaptation to the tissue, silk would be an ideal suture for the skin perineum were it not for its unfortunate tendency to further the burrowing of bacteria in producing stitch abscess.

Complications may follow the performance of this operation. Hemorrhage usually ceases when stitches are tied. Should it persist, pressure may be applied upon the perineum by a firm pad of gauze, and a gauze tampon may be used in the vagina. Very rarely the operator may be obliged to take out stitches or to twist or ligate bleeding vessels. Hemorrhage after this operation is fortunately of rare occurrence. Infection is not of great rarity and may occur independently of infection in the uterus or a general septic infection. Thorough asepsis prevents this complication in most cases and the avoidance of strong bichloride solutions is a matter of some importance. The mucous membrane of the vagina should be injured as little as possible by antiseptic applications. Bichloride solutions need not be stronger than 1/4,000 or 1/6,000, and lysol one per cent. or normal salt solution are efficient upon mucous membrane. If the operator brings the tissue in good apposition without empty spaces, he does much to prevent the development of infection. The posterior vaginal wall should not be brought together through the fourchette as lochia may be retained and decompose in the pocket so formed. Just before stitches are tied, the parts may be flushed freely with antiseptic solution. In complete tears, the free use of salt solution on the mucous membrane of the bowel, tends greatly to prevent infection. Sterile and bichloride external dressings, prompt and thorough irrigation of the stitches in complete lacerations when the bowels move or the bladder is emptied are all essential. Tearing out of the stitches is a complication sometimes seen where the patients suffer con-

siderable pain after the operation or where the stitches have been brought together too tightly. For pain the use of opium will usually prevent the tearing out of stitches. If stitches have been brought together too tightly, a wound may sometimes seen where patients suffer considerable pain after the operation or where the stitches. Where there is great edema, the application of hot sterile compresses or irrigation with hot sterile salt solution may be useful. A wound is sometimes imperiled by the stitches catching in the dressings. If silkworm-gut stitches be brought upward to one or other side when dressings are applied, this accident is usually prevented.

In the presence of infection, the stitch at the site of infection must be removed as soon as possible and the parts thoroughly irrigated with an antiseptic solution. Vaginal douches should be avoided in these cases because of the danger that the douche may carry infective material from the perineum upward to the cervix. It is an interesting observation repeatedly made that puerperal septic infection by uterine or constitutional infection may develop while wounds in the perineum and pelvic floor heal by primary union.

The after-treatment of these cases consists of surgical cleanliness so applied as least to disturb the tissues and parts which are healing. We prefer the use of antiseptic solutions by pouring rather than by spraying or sponging. Small metal pitchers of convenient size are readily obtained which can easily be boiled and from which the antiseptic solution desired may be poured over the parts. They may then be dried by cotton or frequently require no drying, as the vulvar dressing soon removes the excess of fluid. The use of the catheter after this operation should be as brief as possible, and after two to three days in the most extensive cases its employment should cease. If the tissues be thoroughly irrigated with normal salt solution or any dilute antiseptic after the bladder is emptied, no harm will follow spontaneous micturition. The old custom of locking up the bowels after these operations has largely passed away. After complete tears, the rectum may be kept quiet to advantage for forty-eight hours and after that daily movements of softened fecal matter should occur. By thorough saline irrigation of the stitches and rectum such movements will not cause complications. Very rarely do the patient's limbs require restraint and only in extensive lacerations where the patient is restless when she wakes from ether. The removal of silkworm-gut stitches may take place from the seventh to the fourteenth day, while catgut requires no removal. Very rarely the knots of catgut stitches remain indefinitely to the patient's annoyance, but such are easily removed by irrigation or by a pair of dissecting forceps.

After the operation for complete tear, fistulae may remain between the vagina and rectum for

some time. Fluid may pass between these cavities and the operator may be disappointed in the failure to obtain complete union. If care be exercised in aseptic precautions and saline flushing, these fistulae will close spontaneously and their presence will delay but slightly the patient's convalescence. After the stitches have been removed, and before the patient is allowed to take active exercise, she may assume the knee-chest posture twice daily to advantage in cases where the uterus is larger than normal and where a tendency to prolapse of the vaginal walls is present. The average patient after such an operation, where union occurs without infection, is convalescent in from three to six weeks. In cases where but partial union occurs, so soon as the first stitches have been removed a good result can often be obtained by curetting thoroughly the unhealed parts of the laceration and by inserting stitches a second time.

In estimating the success of an immediate operation the vaginal walls must be completely or nearly in apposition and without prolapse. There must be good control of the sphincter of the bowel and the patient must be free from pain, especially when using a closet or commode or when moving about. There must be no considerable vaginal discharge coming from the sutured tissues. Observation has shown that complete union of the perineum is much less important than that of the pelvic floor. If the pelvic organs are in good position without prolapse, the vaginal walls in apposition without prolapse and the patient has good control of the bowels without pain, a practical cure has resulted, although union in the perineum may not have been complete.

RECENT ADVANCES IN SURGERY.¹

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WHILE surgery has to report no epoch-making discovery of recent date, many improvements have been made on some of our older methods.

For treating *congenital fistula* of the neck König advised first mobilizing the fistula by dissection to a point above the digastric. It should then be liberated by the finger to a point close to the mucous membrane of the mouth by dissecting bluntly, the oral cavity being kept wide open by a Whitehead speculum. A curved probe is now introduced into it through the wound to a point very close to the tonsil. Then the mucous membrane of the oral cavity is incised and a silk thread fastened to the external end of the fistula. Now the mobilized fistula-tract can be pulled into the oral cavity, where it is fastened to the wound margins of its mucous membrane. The projecting part of the fistula is then removed.

The connection between the integument and

¹ Read at the Annual Meeting of the American Therapeutic Society, June 3, 1904.

the fistula is thus cut off, and the remainder of the latter simply represents a harmless opening in front of the tonsil. The same method can be utilized in blind internal fistula.

The use of the *bronchoscope* for extracting foreign bodies has proved to be extremely valuable. Garel, of Paris, reports the case of a young woman who, three months previously, had aspirated a steel pin with a glass head. Kilian's bronchoscope was introduced through a tracheotomy opening, and by its aid the pin was seen, point upward, in a bronchial tube of the third order. It was extracted by a forceps. (The bronchoscope is much more useful after several skiagraphic exposures have been made. Ref.)

One of the most remarkable advances of recent date is represented by *Sauerbruch's air-*

sufficient amount of air to keep up continuous negative pressure inside the chamber. Professor von Mikulicz and his assistant, who did some work inside of the air-chamber for an hour, did not suffer any discomfort. The chamber is composed of boards, which are lined with tin, soldered at the corners. The roof is made of glass.

ABDOMINAL SURGERY.

In the surgery of the *biliary passages* many valuable contributions were received. The admirable work of Kehr and Mayo deserve special attention. One of the remarkable events was the successful removal of the aneurism of the hepatic artery by Kehr.

Interest in the various types of appendicitis and the technical steps of appendectomy is still undiminished, and it is interesting to note that American doctrines are more and more adopted in Europe as far as the pathology of the vermiform process is concerned.

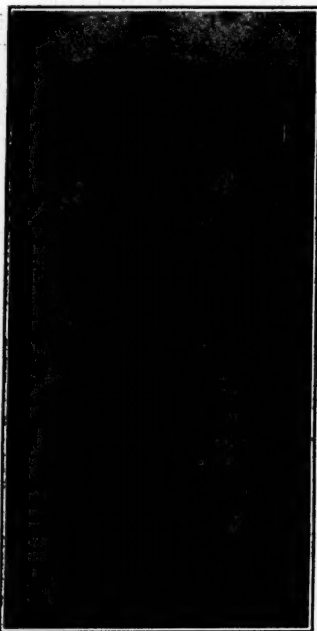
Many of these European surgeons who used to ridicule the "American hyperactivity" are now enthusiastic advocates of early interference in appendicitis, and this number is growing larger from day to day.

In order to facilitate operative procedures in the *hypochondriac* and *epigastric* regions, Marwedel tried to turn up the rib-arch, considering that the rigidity of the thoracic margin interferes with the access to the superior hepatic surface. The same applies to the lower portion of the esophagus and to the dome of the diaphragm. The *modus operandi* is as follows: By a curved incision, running parallel with the costal margin, and extending from the xiphoid process to the tenth rib, the abdominal wall is divided. The rectus muscle as well as the external oblique are separated from the internal oblique and the transversalis. The cartilage of the seventh rib now comes in view, and is divided at its sternal junction. In the same manner the junctions between cartilages and bone of the eighth and ninth rib are exposed, and divided by blunt dissection. By retracting the loosened portions of the ribs and the soft tissues over them over the chest, access is now gained to the hypochondrium.

The same principle of procedure can be utilized on the left side for approaching the cardia and the upper part of the stomach.

The disturbance caused by *adhesions* and *peritoneal bands* have recently received more thorough attention. Lejars, the excellent French surgeon, has made a special study of these important conditions, which frequently show their clinical manifestations by vague functional disorders, only so that they may not be recognized. The patients are often regarded to be neurasthenics. Later pain may be a predominating symptom, and finally, even strangulation may be produced. Sometimes after an apparently slight abdominal injury vomiting, pain, colicky attacks and symptoms of obstruction may turn up. Exploratory laparotomy will clear the situation, and

Fig. 1.



Recurrent sarcoma of leg four months after operation. (See nodule in right gluteal region.)

chamber, which eliminates pneumothorax in intrathoracic operations. This is done by excluding the atmospheric pressure during the operative procedure, thus preventing collapsing of the lungs after being opened to the air. In a lower animal Sauerbruch opened the thorax on both sides, and removed sternum and ribs without seeing the respiration interfered with in the slightest degree. The Sauerbruch chamber is airtight. Its size permits of the presence of surgeon, assistant, patient, and operating table. The head of the animal may project outside, while a rubber-cuff is tightened around his neck. Regulation of the air pressure is done by an air pump, a valve in its wall permitting the entrance of a

detaching or excising the constricting bands will promptly remedy the disorders. Lauenstein and Gersuny have also published similar experiences. The symptoms observed by the various authors were either gastric, intestinal or pelvic. The impression was always that there was some obstacle in the intestine and that painful distention took place above the obstacle. Medication was always unsuccessful. These cases frequently simulate chronic constipation, enteroptosis and pelvic neuralgia. Sometimes they were, as the autopsy table showed, taken for ulcer or carcinoma of the stomach, or cholelithiasis.

The principles observed by Mayo in his *pylorectomies* are also noteworthy. Of his 41 cases, 37 were performed for carcinoma and four for inveterate ulcer. His steps are the following: "After opening the abdomen doubly ligate and divide the gastric artery, then ligate and divide the necessary amount of gastrohepatic omentum close to the liver, leaving most of its structure attached to the stomach. Doubly ligate and divide the superior pyloric artery and free the upper inch or more of the duodenum. Then with the fingers as a guide underneath the pylorus, in the lesser cavity of the peritoneum, ligate the right gastro-epiploic or gastroduodenal artery, and progressively tie and cut away the gastrocolic omentum distal to the glands and vessels up to the appropriate point on the greater curvature, and here ligate the left gastro-epiploic vessels. Then double-clamp the duodenum purse-string, divide between with the cautery, leaving one-fourth inch projection. With a running suture of catgut through the seared end the duodenum is closed as the clamp is removed, a purse-string suture about the duodenum enables the stump to be inverted. The proximal end of the stomach is double-clamped along the Mikulicz-Hartmann line and divided with the cautery, leaving one-fourth inch projection. Suture through the seared stump with a catgut button-hole suture. This is again turned in after removal of the clamp by a continuous silk or Cushing suture. Finally follows independent gastrojejunostomy."

The value of *subcutaneous feeding* in such disturbances of the gastro-intestinal tract, in which nutrition by mouth or rectum has become impossible or is contraindicated, is proved by Friedrich, who injects 40 to 100 grams of grape-sugar in a three per cent. solution *per diem*. Recently he also tried the pure pepsin-peptone, free from albumoses. A useful combination consists of two grams of grape-sugar, two grams of table-salt and four grams of pepsin-peptone to 100 grams of water. Especially in very severe disorders, like perforation of the stomach or intestine or severe peritonitis subcutaneous feeding is apt to tide the patient over the critical period. (Ref.—Can verify the correctness of this statement by his own clinical experience.)

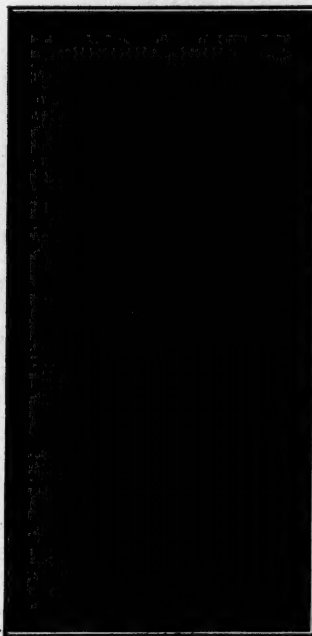
Similar good results were obtained by Credé in using a meat preparation which contains solu-

ble albumin in a readily assimilated form, 95 per cent., and traces of iron and salt, two per cent. This preparation, called kalodol by him, resembles the albumin in the circulation. This explains why it is so easily assimilated. About four kalodol injections *per diem* suffice for a patient. Rectal injection of kalodol may also be resorted to, as it is easily absorbed.

Chaput is in favor of performing capital operations on the abdomen under local *cocaine anesthesia*. He resorts to general anesthesia only when the patient is timid. He performed gastro-enterotomies, appendectomies and hysterectomies, under cocaine anesthesia.

To intensify the resistance of the peritoneum against infection, von Mikulicz advises the in-

Fig. 2.



Metastatic nodules of thorax, abdomen, face and arms.

ternal administration of acid of *nuclein*, which is supposed to increase the number of the leucocytes, thus rendering bacteria innocuous.

In *suppurative peritonitis* Küster places the patient in the abdominal position, in order to facilitate the discharge of the exudate from the area of operation.

Kapsammer's observation, that the *freezing point* of the urine may be influenced by reflex polyuria from catheterization of the ureters, is noteworthy. The results of this new method should, therefore, be taken *cum grano salis*. In one of his cases of renal tuberculosis, for instance, there was five per 1,000 albumin, and the freezing point of the urine was 52° C., while that of the blood was 58° C. Despite this fact

nephrectomy was performed, the albumin disappeared and the patient recovered. Kapsammer pleads for catheterizing both ureters in order to arrive at a correct diagnosis, and is also in favor of employing the phloridzin and methylene blue functional tests as well. One case of tuberculosis of the bladder was cured by the local use of bichloride of mercury in combination with guaiacol-iodoform. In bilateral tuberculosis it is often found that a slightly affected kidney recovers after the removal of the diseased mate.

On the basis of 79 cases of osteomyelitis and 108 osseous tuberculosis, von Mostig-Moorhof recommends filling up osseous cavities with iodo-

an effective toxin. So far Doyen's observations were not corroborated by other investigators.

The observation that epithelioma may be produced by continued exposure to the Roentgen rays is not in favor of bacterial origin, but of the irritation-theory (Ref.).

Literature upon the application of the Roentgen rays in surgery has increased remarkably. The representation of renal calculi has become a reliable method in the hands of the expert. Reports on the successful skiagraphy of biliary calculi have also become more frequent. The therapy of fractures is much simplified and perfected since the Roentgen guide shows the true nature of the conditions. Irreducible fractures are now operated upon early instead of waiting for the development of a conspicuous deformity, which at a late stage cannot be corrected as well as at any early period of the injury.

The knowledge of the various diseases of the bones has been much augmented, and new laws of differentiation between inflammatory, syphilitic, tuberculous or osteomyelitic processes, and osteoma, osteosarcoma and osseous cysts have been established.

The indications for the therapeutic utilization of the Roentgen rays have become clearer and great efforts are made to keep facts and conjectures well apart. While there are many encouraging results reported in some malignant diseases, utopistic views should not be held, and it must always be kept in mind that this new and delicate field is still in a stage of development. The radium has become a competitor of the Roentgen rays in this respect, but, while it has some advantages over the Roentgen rays, as a whole, it has so far proven to be of limited practical importance. Its undoubted advantage over the Roentgen rays is, that it can be placed into mucous cavities, like the nose, esophagus, stomach, uterus, urethra, etc. The small size of the radium tubes also permits of imbedding them within the tumorous tissue through an opening made by puncture.

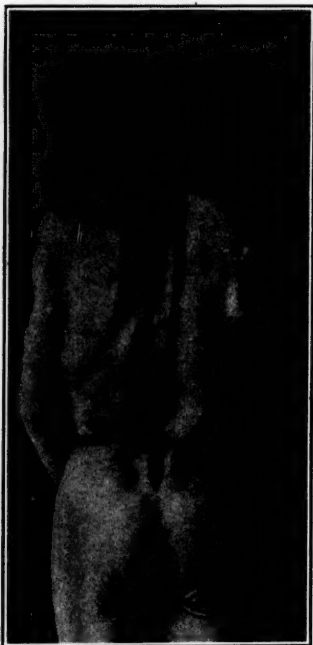
The radium treatment may also be tried in cases in which the Roentgen ray treatment has proved to be unsuccessful. As a diagnostic means the radium in its present form cannot be used in practice.

The *Finsen method*, ingenious as it is, can, in its present state, not compete with the Roentgen treatment. It should, therefore, be resorted to in cases only in which the Roentgen ray or radium treatment has proved to be unsuccessful.

A variety of new and useful apparatus were invented, among them the compression-diaphragm, the various skiameters, the osteoscope, and the non-penetrable glass apparatus of Kohl, which shield the operator, may be mentioned.

What may sometimes be done with the Roentgen rays is illustrated by this lady (demonstration) who was presented in this room two years ago, shortly after operation. She showed the first signs of sarcoma of the orbit nearly three

Fig. 3.



Metastatic nodules in the back, face and arms.

form. In some cases of osteomyelitis of the tibia he removed the tibia in its entirety and filled the resulting defect with his "Iodoform-plombierung." As is well known, iodoform is not absorbed by dead bone, but only when it is reached by the new growth of osseous tissue. Thus absorption of the iodoform takes place so slowly that the danger of intoxication is small. The process of healing can be studied by skiagraphy.

While many interesting experiments have been made on the carcinoma question, nothing new has been derived from them. Doyen claims to have isolated a bacterium, which he calls the *Micrococcus neoformans*. He obtained vaccines and toxins from it. He has treated 126 cases so far, 21 being cured and 47 improved. In 58 patients there was a negative result. Eight months of cultivation are necessary for the production of

years ago. Enucleation of the eyeball was undertaken, but recurrence in the frontal bone took place three months thereafter, and finally reached such an extent that it was regarded inoperable.

After having ascertained the extent of the growth by skiagraphic exposure, I removed the diseased bone portions. Three weeks thereafter, when cicatrization had taken place, irradiation was begun three times a week, exposing the patient ten minutes each time. No change was observed during two month's treatment. But when irradiation was stopped for three weeks, the signs of recurrence again appeared, the vicinity of the orbit projecting far. Now Roentgen irritation was resorted to every day at small distance, low vacuum and high current being chosen. After eleven exposures extensive dermatitis developed, which proved to be of the ulcerative type, within the center of the irradiated area. At the same time complete alopecia of the diseased side set in. The patient suffered considerably for a week, then the symptoms gradually subsided. The treatment first consisted in the application of Burow's solution, and in the use of xeroform gauze later. Three weeks after the beginning of the vehement dermatitis all signs of the sarcomatous infiltration had disappeared, especially the projection, and the general condition of the patient improved remarkably. With few intermissions light Roentgen treatment (twice a week) was kept up until to-day, that is, two years after the operation. There is still a slight projection in the orbital region, which, however, appears to be composed of normal tissue. It is interesting to note that the scar produced by the incision, has completely disappeared after the dermatitis. So, instead of disfiguring the patient, the burn has in this instance served as a beautifying agent. Whether or not a recurrence will take place in this case cannot be determined; still, after the lapse of two years this does not seem to be probable. The general condition of the patient is undisturbed. Of course we must not generalize from one case. There are cases of sarcoma in which the Roentgen rays show no inhibitory action at all, while others of the same variety react at once and markedly.

Clinical experience indicates that the results in round-cell sarcoma are better than in the other types. Other factors are to be considered, too; for instance, the general composition of the growth and the region. My experience shows a larger percentage of improvements in sarcomas of the face than of the extremities.

Of course, whatever can be reached by the surgical scalpel should not be left to the rays, the latter to be employed largely after operation or in inoperable cases.

As a counterpart of the favorable case just demonstrated, this case of a man, aged fifty-eight years, may serve. His history reveals that two years ago he noticed a hard swelling above the right gastrocnemius muscle, which was pain-

less at first; but after having slowly increased in size, there was considerable discomfort while walking.

A year ago I made an extensive extirpation of the growth, which at this time had reached the size of a man's fist, at the Post-Graduate Hospital, removing a considerable portion of the gastrocnemius muscle at the same time. Three weeks afterward Roentgen treatment was begun, but the patient became negligent until four months after the operation a recurrence formed in the scar (Fig. 1).

Irradiation was taken up then for a short period, during which about a hundred metastatic nodules formed on his trunk, face and extremities (Figs. 2 and 3).

Miscroscopical examination, made by Dr. Henry T. Brooks, showed the presence of round cells. The patient begins to present the signs of cachexia now. He is taking Fowlers' solution, but nothing seems to arrest the metastatic process.

THE INFLUENCE OF THE FIRST AND SECOND DENTITION PERIODS IN THE ETIOLOGY OF EPILEPSY.¹

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It is my conviction that we are never justified in looking upon the convulsions of infancy and early life as harmless manifestations.

Numerous convulsions appear at this period that begin as benign and end as such. But thousands begin as benign that end in established epilepsy. The fact that many infantile convulsions do not pass into epilepsy grants us no license for regarding such convulsions as innocent of future harm.

I am led to make this statement after ten years' experience at The Craig Colony for Epileptics, during which time it has been my privilege to study the etiology of epilepsy in nearly 2,000 cases.

It would be tedious to attempt to recount the times I have questioned the parents of epileptic children and studied in conjunction with the information thus derived the medical testimony in the case along this line.

Parents very commonly answer questions concerning the probable cause of the disease in their child, and the age at which the first convulsion appeared in this way: "Yes, my child had convulsions as a baby. They came on before the end of the first year. I was told that they were 'teething fits' or 'worm' fits or 'stomach' fits, and that they would go away of themselves after a while."

To a certain extent such prophecies are true. Convulsions that appear in connection with the

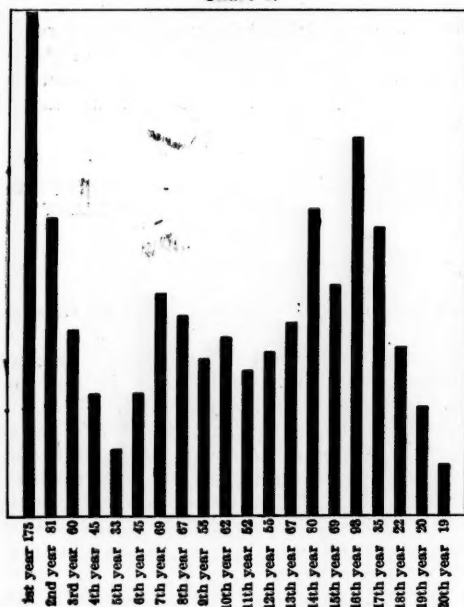
¹ Read before the Section on Pediatrics, New York Academy of Medicine, October 13, 1904.

first and second dentition do often disappear entirely for years, only to recur at some future time when the child is passing through a period of physiologic stress, particularly like the stress of the epoch of puberty.

The lesson we often fail to learn is *the necessity for constantly recognising in such children the presence of the convulsive tendency*. To keep the child free from convulsions in the future, this tendency must be borne in mind and always respected.

The question I particularly desire to discuss before you to-night is whether difficult dentition alone or acting in conjunction with a previously prepared organism is capable of causing convulsions that may pass into epilepsy.

Chart 1.



Showing the age in years at which epilepsy originated in 1,215 cases. Note the rise during the six, seven and eight years, coincident with the second dentition period.

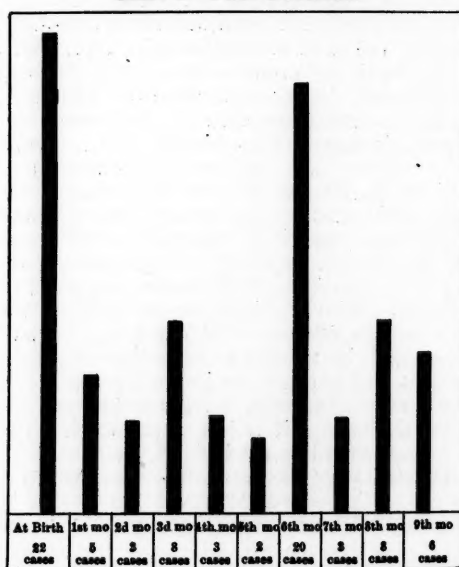
The evil effects of dentition when it departs from physiologic lines, apparently do not now have the recognition that was given them some years ago. Many physicians of the present day deny *in toto* that "teething" ever causes convulsions that may pass into epilepsy. From this view I dissent. I have long felt that in selected cases the "stress" of difficult dentition is the touch-stone in the causation of convulsions. Unfortunately, few epileptic children are placed in colonies or institutions especially designed for them until they are confirmed epileptics. This fact denies to investigators in such institutions the opportunity of studying the incipient stages of epilepsy.

For some years I have been studying the age

at the onset of epilepsy in several thousand cases, to determinate what proportion of them acquired epilepsy coincident with the first or second dentition periods. The results of these studies so impressed me with the undoubted influence of such periods in causing, or helping to cause, this disease in selected cases, that I am pleased to lay the main facts that I have ascertained before you, hoping that your experience and discussion may throw more light on a problem about which there is now much obscurity.

I show you first Chart No. 1, that gives the age for each year at the onset of epilepsy in 1,215 cases from the first to twentieth years inclusive. These 1,215 cases, all under twenty years of age, represent 80 per cent. of all patients admitted

Chart 2.—First Dentition.



Showing the age in months at which epilepsy originated in 80 cases. Note the increase at the sixth month, which marks the beginning of the influence of the first dentition, that is, the period when the teeth begin to cut through the gums.

to The Craig Colony up to the time these figures were made.

The next point to which I call your attention is the large number of cases during the first year of life—175, equal to more than 14 per cent. of them all.

After passing the first year there is a very decided and continuous decline up to and through the fifth year, there being 33 cases only in that year, or about one fifth as many as during the first year.

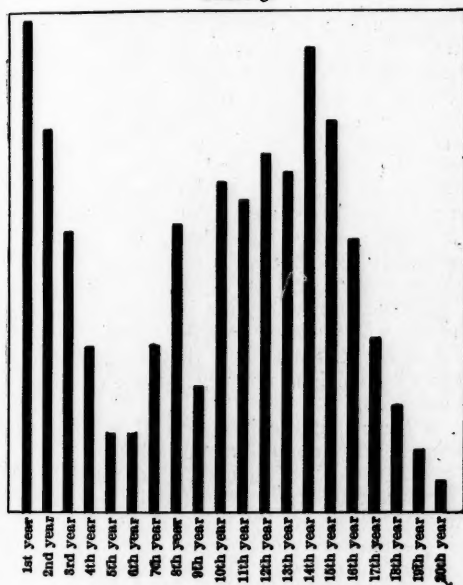
After leaving the fifth year we enter upon the period of the second dentition, and we are struck at once with the decided rise in the number of cases during the sixth, seventh and eighth years: 45, 69 and 67, respectively, the number dropping to 55 during the ninth year.

The remainder of Chart 1, while of great interest in showing the very marked influence of the epoch of puberty in both sexes in causing epilepsy, is of no particular interest in our present studies; except, I will repeat the important fact that so-called "teething convulsions" which disappear early are quite apt to recur under the stress of the twelfth to sixteenth year period.

Now we will return to the first year which embraces the first dentition period, and note the number of cases arising each month from birth up to and including the tenth month.

Chart No. 2 shows this in 80 out of the 175 cases mentioned in the first year of Chart 1. In the remaining 95 cases, the exact month of origin being in some doubt, they were not considered.

Chart 3.



Showing the age in years at which epilepsy developed in 3,523 cases. Note the greatest number during the first year, the increase during the seventh and eighth years, and the still greater increase during the epoch of puberty.

The first column in Chart 2 shows that epilepsy was present in 22 out of 80 cases, or 27½ per cent. of them all "at birth;" the second month shows a decline to five, the decline continuing through the third month when three cases only occurred. A notable increase takes place during the fourth month, followed by a second decline through the fifth and sixth, after which a very positive rise is noted during the seventh month, 20 cases in all occurring during that month—equal to 25 per cent. of the entire number.

The fact of importance about the rise during the seventh month is that it marks the beginning of the influence of the first dentition period, i.e., the period when the tooth usually begins to cut through the gums.

Chart 3 is made from a grand total of 3,523 cases in all of whom epilepsy developed before the twentieth year; these 3,523 cases constituting about 80 per cent. of the 4,358 studied preliminary to making up this table.

Here the greatest number for one single year was 376 and was during the first year.

All these, in brief, may be ascribed to congenital causes, to heredity, to birth accidents, and to the first dentition. Passing the first year a continuous decrease is noted through the second, third, fourth, fifth and sixth years, when 127 cases only out of 3,523 occurred. Here again the seventh year shows an increase to 168, this increase continuing through the eighth year and reaching 174. After this a fluctuating rate is noted until the twelfth year when the stress of puberty begins to be felt. The four years that cover this developmental period show a vast increase in the number of cases—a grand total of 877 out of 3,523 occurring during these four years.

The fourteenth year which marks the acme of the influence of the period of puberty, stands second in the number of cases for one year periods, there being 258 cases in that year as compared to 376 during the first year. Passing the epoch of puberty the decline is sharp and continuous; so much so that by the time the twentieth year is reached, the time has passed during which more than eight-tenths of all cases of epilepsy occur.

Before citing specific cases that illustrate the influence of the dentition periods in causing epilepsy, I will give the opinions of some leading neurologists on the point in question.

Gowers says: "It is convenient to group the infantile causes of epilepsy into three classes: First, those in which labor was protracted and difficult, or (seldom) premature and swift, in which the symptoms, immediately after birth, suggest some meningeal hemorrhage. Second, cases in which the attacks begin by a severe fit or series of fits, with indications of a local cerebral lesion. Third, cases (which constitute the majority) in which the infantile fits are at first slight and are associated with retracted development, especially manifested by backward teething. The largest group is the third,—the cases in which epilepsy dates from the convulsions called "teething fits." In about two-thirds of the cases beginning in infancy, particulars of which could be ascertained, the fits arose from such so-called "dentition convulsions." It seems legitimate to ascribe to the same cause a similar proportion of the cases respecting which no information was forthcoming. If so, we have a total number of cases due to this cause which constitutes 7 per cent. of all the cases investigated."

Voisin states, "Epilepsy is especially a disease of infancy and of the young. It may come at birth, but usually it is at the time of dentition that the first manifestations occur. In these cases dentition is the touch-stone of hereditary predis-

position. Then at the age of seven or eight the attacks recur with the second dentition.

Féré says: "Epilepsy may appear in connection with dental disturbance. The frequency of convulsions in young infants during dentition is well known."

Graeme M. Hammond says: "I have records of several cases in which convulsions, due to dentition, were followed by true epileptic convulsions."

Peterson says: "I recall a number of cases in which epilepsy was due to the convulsions of dentition."

Clouston says: "I have seen the convulsions of dentition followed by prolonged delirium, ending in idiocy, or in true epilepsy, or insanity of adolescence."

Jacobi says: "Every convulsion ever so slight may produce cerebral hemorrhage with all its possible results,—epilepsy, idiocy, paralysis, and insanity."

Dr. Jacobi, in this connection, apparently did not mean that the convulsions referred to were due to dentition.¹ He did admit, however, that the spasms and convulsions of infancy are serious manifestations, and if allowed to go unchecked may lead to explosions of genuine epilepsy, and later on to insanity.

In reviewing the etiology of convulsions in children, Sachs² has this to say: "Of the influence of two conditions there can be no reasonable doubt. The first of these is dentition; the second, gastro-intestinal irritation. There has been some question whether a tooth about to cut through the gum can cause a decided eclamptic seizure.

Delayed dentition is so frequently associated with rickets that the latter condition is considered by many to be the chief factor, and this I believe to be true; but convulsions do at times occur in children who present no tangible signs of rickets. Moreover there is good reason why a cutting tooth should produce convulsions in a child so disposed, say by rickets, or any form of exhausting disease. "The cutting tooth" is a direct irritant to the filaments of the trigeminal nerve, which carried this irritation easily enough to the convulsive centers at the base of the brain. I have little doubt of this special reflex origin of convulsive seizures since observing in the adult the occurrence of severe epileptic paroxysms in a case of trigeminal neuralgia.

I could easily bring scores of cases to your attention in which epilepsy followed convulsions that appeared for the first time coincident with the first dentition, but I will report three or four only.

Case I.³—At five months of age a little girl had a severe attack of enteritis that lasted a week, and was attended by "several severe convulsive seizures in every respect like those met with at

this age in similar conditions." After recovering from the enteritis she had no further trouble until the first tooth was cut at the seventeenth month, when "she began having convulsive seizures very frequently, often several in a day. Anger or freight always acted as the immediate excitants of attacks. At such times she held her breath until she became very much congested about the face and chest, when the seizures would begin,—first as tonic, then as clonic spasms, and lasted about three minutes, consciousness being entirely lost, and post-convulsive stupor lasting for several hours."

When the case came to my knowledge there had been no attacks for a year, the father stating, "Troubles that would have brought on a convulsion a year ago, seem now to have no unusual effect on her."

This case is quite typical of its kind. In the absence of any unfavorable heredity, this little girl may have no further seizures. Nevertheless, she should be watched with the utmost care during the second dentition, or during the eruptive fevers, should she have any of them, and especially should be watched during the critical epoch of puberty. Had the first convulsion from which she suffered caused a cerebral hemorrhage, as it might readily have done, she would unquestionably have become a hemiplegic epileptic; and furthermore, had she not been obliged to run the gauntlet of the irritation incident to the first dentition, which, owing to a developmental fault, was delayed, it is not likely that she would have had any convulsions after the attack of enteritis had subsided.

It is clear that the irruption of teeth in this case incited the second series of attacks.

Case II.—G. F. (female). Admitted to the Craig Colony in May, 1904; family history bad; mother had "spasms" when a child, and "periodic headaches throughout her life,"—the "spasms" occurring at the first dentition. Father alcoholic. Patient's birth was normal in every respect. No illness of any kind up to the sixth month when *the first convulsion appeared coincident with the cutting of the first tooth*. The second convulsion followed a week later, after which they regularly appeared at the rate of two to four a month. At first they were petit mal, but later changed to grand mal; invariably affecting the right side more than the left.

At the age of seventeen years she is a confirmed epileptic with attacks that average ten a month. Her mental condition is greatly impaired. She is subject to violent outbursts of temper, and occasionally commits unpremeditated assaults upon those about her. All her attacks grand mal, and all are severe.

In this case there is no room to doubt the establishment of genuine epilepsy as a result of convulsions incited in the first instance by dentition.

Case III.—W. A. W. (male). Admitted to the Craig Colony June 7, 1904; epilepsy then of

¹ "Causes of Epilepsy in the Young," Medical News, December 13, 1902.

² Nervous Diseases of Children, 1895.

³ This case was reported to me by Dr. W. L. C., the patient being a member of his family.

eighteen years' duration. Family history unsatisfactory. Father a marked inebriate for twenty years. Patient had no convulsions at birth. Was well developed and healthy in every respect up to the ninth month when the first "spasm" appeared, coincident with the cutting of the first tooth, several occurring in quick succession, and all being severe. Two weeks later they recurred, when they caused a cerebral hemorrhage which resulted in left hemiplegia. Attacks from the first of the grand mal type. Mental condition characteristic of true epilepsy. Eighteen years after onset of the "spasms" in this case, epileptic attacks regularly occurred at the rate of four to ten a month. In this case it is equally as clear that the apparently harmless "spasms" or "convulsions" due to the first dentition later on caused essential epilepsy.

Case IV.—P. A. K. (male). Admitted to the Craig Colony when twenty-one years of age; epileptic since the eighth month. Family history bad. Father a habitual drunkard. Nine children in the family. Six of them had "teething convulsions," one girl dying at the ninth month while in such "spasms." Patient's birth normal. No trouble until the eighth month when first convulsion appeared with "the first set of teeth he cut." This convulsion was severe, lasting twenty minutes. At four years of age he had "a convulsion that lasted forty-eight hours," and which was followed by "paralysis so that he crept for a year before he could again walk." His palsy is still marked seventeen years after its onset, while his attacks of grand mal that appear daily are extremely severe.

Cases V and VI.—I. J. and A. J., sisters, members of an epileptic family. Paternal grandfather and father had epilepsy, the disease appearing in the latter when he was twenty-six years of age, the immediate exciting cause being alcoholism. The father inherited a predisposition to epilepsy, and might have escaped the disease had he carefully guarded his epileptic tendency; but his habits brought it to light.

The two patients, in question, inherited epilepsy from the father, or at least so strong a tendency to it that the slightest irritant was all that was required to bring it into full development. The elder daughter reached the twelfth month when she began having "teething spasms." She had been perfectly well to that time. The younger daughter passed through an almost identical experience. She weighed eight pounds at birth, was well developed and normal in every respect. She also had "teething spasms" at the twelfth month, and from these naturally passed into a true epileptic. I say she naturally did this, because under such an unsatisfactory heredity, and the etiologic factor in question, no other outcome was to be expected.

The father and two daughters were admitted to the Craig Colony in August, 1904; one daughter being fourteen, the other eleven years of age; both having severe grand mal attacks on an aver-

age of one to three times in twenty-four hours. All of them bear marked evidences of the stigmata of epilepsy.

It is always a mistake, in my opinion, to regard the convulsion of dentition, or the convulsions due to any other cause in early life, in any other than a serious light. They are never positively benign, at least we have no right to regard them so. That infants who have convulsions escape serious consequences in the future is always a matter for congratulation; but the physician should never assume that this is the outcome to be expected. When disease tendencies are so strongly marked as these morbid manifestations so plainly indicate, the most constant care and treatment should be undertaken at once in every case with a view to preventing epilepsy, or idiocy, or insanity, or other states of degeneracy destined to destroy the mental life of the individual in question.

In conclusion, my views in the matter may be briefly summarized as follows:

1. Difficult dentition, *i.e.*, the piercing of the gums by the tooth may, in suitable subjects, constitute a sufficient irritant to cause convulsions.
2. In suitable subjects these convulsions may ultimately lead to epilepsy.
3. By suitable subjects I mean infants who inherited a neuropathic tendency to disease; whose parents had epilepsy, or insanity, or who were alcoholic, or suffered from some other general vice that could be transmitted to the offspring in some form capable of vitiating its powers of resistance to disease.
4. I do not believe that difficult dentition alone in a child who inherited no ancestral taints, and who at its birth is free from a tendency to nervous disease, can cause epilepsy.
5. Great caution must always be exercised to lay the true cause in cases of this kind where it belongs; for the reason that gastro-intestinal disorders, the sequelæ of the eruptive fevers and other factors common at this age, may produce similar results.

THE CARE OF FRACTURES FROM THE STAND-POINT OF THE GENERAL PRACTITIONER.

BY WM. S. NEWCOMET, M.D.,

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PHYSICIAN IN CHARGE OF X-RAY LABORATORY, PRESBYTERIAN HOSPITAL; REGISTRAR TO ST. AGNES HOSPITAL, ETC.

ALTHOUGH this subject might seem to have been worn threadbare, the indulgence of this assembly is asked while their attention is drawn to several instances where obscure fractures have caused considerable annoyance to the attendant physician as well as to the patient, and in a few instances the present existence of both would have been far more pleasant if the difficulty had been properly recognized and treated.

Of all the trials that come within the scope of a physician's labor, it can safely be said that fractures cause him the most trouble. These injuries often appear to be trivial, but as time

passes and the patient is still annoyed either by pain or loss of function, friends persuade him to seek another practitioner and he often receives some indiscreet advice, and in the end such cases usually lead to the courts. This situation is most embarrassing, and while the law only expects the physician to do his duty, it is the jury that in most instances is called upon to decide whether he has done it. At such a trial, just as the case was given to the jury, a lawyer who was defending a physician once said he knew the case was won "if there was not a man on the jury who owed a doctor bill."

Although such occasions are rare, the liability of such occurrences would be decidedly less, if in cases of fracture the proper precaution was always taken.

The older text-books advise the administration of an anesthetic in all injuries the nature of which is the least obscure, but this method has been superseded by the X-ray, which is safer and far more reliable, giving a graphic description of the exact amount of damage.

It would seem improbable that such injuries as fracture of the femur and dislocation of the shoulder would lead to error, yet in the last year two of the former and three of the latter have been seen and in all but one of these cases the deformity will be permanent.

A less disastrous mistake, and one that often happens, is the neglect to recognize a green-stick fracture. Such an error, however, is not likely to lead to any serious consequences, though the patient is made more comfortable when the proper dressings have been applied. A most troublesome class of fractures occur about the joints, commonly at the wrist, elbow, shoulder or ankle. In these cases only a small fragment of bone is torn off and is often bound so firmly by the ligaments that the ordinary signs of fracture are absent, thus concealing the true nature of the injury. These injuries are often treated as sprains, and when the thickened process is noted after the acute swelling subsides, it is supposed to be due to inflammatory débris. In institutions where all such injuries are systematically examined by the X-ray, this fact has been substantiated. Such injuries will cause more inconvenience to the patient, owing to the involvement of the joint, than do fractures of the shaft of the long bones with considerable displacement.

A demonstration of these facts is well illustrated in the following series:

In the case of Mrs. S., where the posterior portion of the radius was broken off, although a fracture was suspected, the signs were quite obscure. This might have been on account of the swelling, although it was more likely to be due to the firm ligaments. It can easily be seen how a good radiograph, in such an instance, would be more satisfactory than the examination of the part under the influence of an anesthetic. The amount of displacement of the fragment can easily be seen in the radiograph made shortly

after the injury, which gives a clear conception as to the exact amount of damage. In the second series of radiographs, made several months after the injury, very little evidence of the original displacement remains, although at this time the patient still suffered considerable inconvenience from pain and loss of function.

It is interesting to compare this group of radiographs with those of Miss J., where the fracture of the radius was transverse and about three-quarters of an inch above the wrist-joint. If it were not for the fact that the styloid process of the ulna was also broken off, except on close inspection the injuries would appear to be the same, although the last case had the deformity typical to such an injury.

Another radiograph shows a rather unusual injury, occurring in the case of Master X., where the fracture existed just below the epiphyseal cartilage and, like the first case, was very annoying both from the standpoint of diagnosis and treatment.

Just here it would be well to call attention to the difficulty experienced in correctly interpreting radiographs of children when the injury exists in the neighborhood of the joints. It is a good rule, where it is possible, always to take the sound counterpart in exactly the same position and compare the relations in the two pictures.

In the foregoing cases it is easily seen how two of them could have been mistaken for sprains, although the severity of the symptoms might attract attention for further investigation. On the other hand, a fracture, such as occurred in the case of Mr. S., would be entirely overlooked; in this instance the man suffered very little inconvenience, either at the time of injury or during treatment.

It is interesting to compare the last two radiographs with the series of the first case, where so far as can be seen, the result is perfect, although at that time it will be remembered the patient still suffered considerable inconvenience; in this last group there is evidence of considerable thickening of the bone, while the patient suffered very little pain.

The annoyance that results from fracture cases in most instances may be attributed to a faulty conception of the location and extent of the injury, although at times the failure to obtain good results might be due to the treatment. In two instances that were lately seen, ugly deformities were due to a method of dressing which may be good in theory, but very bad in practice; namely, after the bone is placed in position or "set" the dressings are applied, and then they are allowed to remain on for three or four weeks; if in that time they become loosened, as they sometimes will from the subsidence of the acute swelling, a new bandage is simply wrapped around the old dressings. This is an extremely dangerous procedure and one that should be condemned, as it will always give a poor result.

In conclusion, it might be stated that too much care cannot be given to our fracture cases, and where doubt exists as to the nature of the injury, it is best to clear up the mystery immediately and not wait until the bones become united and leave a deformity that lasts the remainder of the patient's life. It is not always possible to obtain results that are most desired, but these unfortunate instances would not be so common if in all cases the proper precautions were taken.

A NEW METHOD FOR STAINING THE CAPSULES OF BACTERIA: PRELIMINARY COMMUNICATION.

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ALTHOUGH many methods for staining the capsules of bacteria have been devised, the opinion seems to be almost unanimous that they are for the most part very variable and unreliable in their results. Not this alone, but also the difficulty of differentiating the encapsulated *Diplococcus* from similar lanceolate organisms, especially of the streptococcus type, led the writer, early in May of this year, to devise a procedure which would enable the bacteriologist to identify the *Diplococcus lanceolatus* with greater ease and precision.

The recognition of the encapsulated organisms in the very first cultures taken from exudates, when for any reason their demonstration in the exudates themselves is impossible, is of prime importance. It is in this particular regard that the method advocated fills a want left by the older procedures.

By it capsules can be obtained not only in exudates but also on certain culture media. The configuration of the capsule of the pneumococcus, when recently isolated, and on certain media, differs from that produced by the methods employed heretofore, and from that of other organisms in so characteristic a manner that the diagnosis of the organism becomes a comparatively easy matter.

The older stains present the capsule as a diffusely staining, poorly outlined, elliptical band immediately surrounding the diplococcus. With my method it has the following features: There is a refractile, deeply staining, regularly outlined, narrow, elliptical capsule membrane, separated from the diplococcus by a clear area of capsular substance which either remains unstained or takes a faint color. Each of the other encapsulated organisms thus far studied has its own peculiar type of capsule. The *Bacillus mucosus capsulatus* shows a broad mucoid envelope with an easily destructible membrane, the "*Streptococcus mucosus*," one of similar nature, and some strains of the pyogenic streptococcus shows only a fine linear envelope.

The Method.—The necessary solutions are as follows: (1) Müllers fluid (bichromate of potas-

sium, 2.5 grams; sulphate of sodium, 1.0 gram; water, 100 c.c.) saturated with bichloride of mercury (ordinarily about 5 per cent). (2) Beef, human or other blood serum diluted with an equal amount of normal salt solution; or ascitic or pleural fluid. (3) 80 to 95 per cent. alcohol. (4) Tincture of iodine, U.S.P. (5) Freshly prepared stain; anilin water gentian violet, made up as follows: Anilin oil 10, water 100, shake, filter and add 5 c.c. saturated alcoholic solution of gentian violet; or, 10 per cent. watery fuchsin (i.e., saturated alcoholic solution of fuchsin, 10.0, water 100.0). (6) Two per cent. watery salt solution.

Technic.—The culture is thinly and carefully spread over a perfectly clean cover-slip by means of a drop of diluted serum.¹ Just as the edges begin to dry the fixing fluid, solution No. 1, is poured on, the cover gently warmed over the flame for about three seconds, rapidly washed in water, flushed once with alcohol, and then treated with iodine for one to two minutes. The iodine is in turn thoroughly washed off with alcohol, and the specimen dried in the air. Staining for two to five seconds, and washing with salt solution completes the procedure. The specimen is mounted in the salt solution and ringed with vaselin.

Sputum and pus can be stained in a similar manner, the addition of serum being unnecessary, except in very mucoid, stringy purulent exudates.

The method depends therefore upon the rapid fixation of the bacteria while still alive and when spread in a medium which prevents dissolution of their capsules. The Müller's fluid, saturated with bichloride of mercury (i.e., Zenker minus acetic acid), which is found ready in every laboratory, has given the best results. However, a simple saturated solution of bichloride of mercury in one-half per cent. salt solution has also been tried, but hitherto has given less distinct pictures. The results obtained by the use of other fixatives will be reported on at a later date.

Thin spreads can be obtained by first emulsifying the culture in a drop of serum on a separate slide. It is of importance to thoroughly rid the specimen of iodine. The preliminary alcohol wash before the iodine steep is not absolutely essential. The whole procedure, taking some two minutes, can be much shortened by reducing the action of the iodine to thirty seconds. This is accomplished by flushing several times with fresh iodine. Thus a good preparation can be finished in about one minute.

As for the stain, watery fuchsin also gives good results. Double staining by means of gentian-violet and fuchsin is also feasible. Good permanent balsam mounts can be made from these double stained specimens. Methods for making all mounts permanent are now nearing completion and will be given in detail in a future publication.

The questions of the occurrence and variation

¹ Hiss: Centralblatt für Bact., etc., 1902, XXXI, p. 302.

of the capsules of different organisms on artificial media, of changes in morphology, and of the differential diagnosis between the pneumococcus and streptococcus by means of this new technic, I will reserve for discussion in a future paper. The results obtained warrant us in recommending the method to the consideration of the bacteriologist and clinical microscopist.

**A NEW CASE OF CHLOROMA WITH LEUCEMIA,
WITH A STUDY OF CASES REPORTED SINCE**

1893.

BY GEORGE DOCK, M.D.,

AND

ALDRED SCOTT WARTHIN, M.D.,

OF ANN ARBOR, MICH.

(Continued from Page 1084.)

Marrow from Tibia.—Sections show a fatty marrow containing small, irregular islands of tissue exactly like that of the sternal and vertebral marrow, consisting of cells of the "large lymphocyte" type with a high proportion of mononuclear eosinophile cells of varying size and shape. In such islands the normal marrow tissue is entirely replaced. They contain but few red blood cells, and nucleated red cells are extremely rare. From these islands irregular cords of similar cells extend onward through the distended capillaries and blood spaces between the fat cells, the cords becoming smaller as the distance from the main island increases. The appearance is that of a growth extending from the center out into the neighboring tissue through the blood and lymph spaces. This growth is not at all uniform and in many of the capillaries between the fat cells the dilated lumen may be packed with red cells, few cells of the lymphocyte type being present. In such blood spaces nucleated red cells are occasionally seen, and a few bone-marrow giant cells are also found. Neutrophile myelocytes are also more common than elsewhere. Portions of the fatty marrow appear fairly normal with small collections of apparently normal red marrow, but even here the prevailing type of cell is the large lymphocyte. Eosinophiles are not so numerous in these areas.

Smears of the marrow from the tibia show more red blood cells and fewer eosinophiles than the smears of the sternal or vertebral marrow. The red cells are pale and show a greater or less irregularity of size and shape. Nucleated reds are less rare. The prevailing type of cell is, however, the "large lymphocyte." Few of these have any protoplasm, and the majority of the nuclei contain vacuoles. The background contains many free eosinophile granules.

Spleen.—Sections show a diffuse hyperplasia, both cellular and reticular. The distance between the trabeculae is increased. The follicles are almost entirely absent, being represented only by scattered small collections of lymphoid cells around some of the small arteries and the trabeculae. The increase in the fine reticulum of the

pulp is well marked; the blood spaces are obliterated or contain few or no red cells. The spaces of the reticulum are filled with cells that are chiefly of the large lymphocyte type, a very large proportion being eosinophiles. In many fields the number of eosinophiles is greater than the non-eosinophiles. Many neutrophile myelocytes are also present, and the number of polymorphonuclears and small lymphocytes is greater than in the bone-marrow. On the whole, the pulp presents a distinctly myeloid character except for the absence of red cells and giant cells. The small follicles are made up almost wholly of small lymphocytes and contain very few eosinophiles or none at all. There is no infiltration of eosinophiles or of other cells in the connective tissue of the trabeculae; as a rule, the eosinophiles stop sharply around the border of both follicles and trabeculae. A very striking feature of the sections of the spleen is the fact that while the splenic arteries are empty, or contain many cells of the large lymphocyte type, the veins are distended with red blood cells with a relatively small number of white cells. Of the latter the polymorphonuclears and cells of the lymphocyte type are in preponderance.

Lymph Glands.—In general the sections of the lymph glands present a cellular hyperplasia, large numbers of cells of the "large lymphocyte" type infiltrating the lymphoid tissue and replacing to some extent the cells of the latter. The degree of infiltration varies in different glands. In some the "large lymphocytes" are found chiefly in the sinuses and in the medullary cords. Germinal centers are rare. Eosinophile cells are found in large numbers in association with the "large lymphocytes." They are chiefly mononuclear, and resemble the eosinophile cells found in the bone-marrow and the periosteal infiltration. They are also present in large numbers in the connective-tissue trabeculae, particularly near the hilum of the glands. The number of eosinophiles varies, however, in different glands. In the case of the glands taken from the thymus region the cellular infiltration is very marked. In the greenish gland from this region the lymphoid cells are to a large extent replaced by large lymphocytes, the trabeculae are farther apart than normally, and the sinuses are wholly or partly obliterated. No germ centers were found in it. In the lymph sinuses of the majority of the glands there is a distinct proliferation of both the endothelium and the reticulum, the reticular spaces being filled with large endothelial cells, "large lymphocytes," and eosinophiles. Numerous degenerating cells are seen. The same appearances suggesting both amitotic and mitotic division are found here as in the periosteal infiltrations and the bone-marrow. In the majority of sections there is no evidence of an infiltration of the capsule or of the tissues about the gland. In some instances, however, there is an infiltration of cells of the "large lymphocyte" type extending through the capsule and into the surrounding

adipose tissue. Such infiltrations are not, as a rule, marked, but bear in general the same character as those found elsewhere.

Hemolymph Nodes.—In the hemolymph nodes from the retroperitoneal region there is a similar diffuse cellular hyperplasia or infiltration of cells of the same type. Germinal centers are absent; the lymphoid tissue is replaced to a greater extent by myeloid tissue of the same nature as that found in the spleen. Numerous mononuclear eosinophiles are present, and great numbers of these occur also in the sinuses and in the connective tissue of the trabeculae and capsule. The blood sinuses are nearly obliterated and contain but few red cells; there is a reticular and endothelial proliferation, in the meshes of which lie "large lymphocytes," mononuclear eosinophiles, endothelial cells, etc. Phagocytes containing red cells and pigment are fairly numerous in some nodes, but on the whole are greatly diminished. Neutrophile myelocytes are occasionally found, and a few giant cells with large, deeply stained, knobbed nuclei resembling those of the bone-marrow were also seen. In some nodes the greater part of the lymphoid tissue is replaced by a cellular tissue, resembling in all respects that of the sternal and vertebral marrow and the periosteal infiltrations. Such new-formations are analogous to metastases, the surrounding tissues being somewhat compressed and infiltrated. The general picture is that of a gradual replacement of the tissues of the lymph node by the new atypical "lymphocyte" tissue. As a rule such proliferations appear to begin in the sinuses and not in the lymphoid follicles or germinal centers, the latter being latest involved. In those nodes showing such proliferations the atypical cells of the peripheral sinus infiltrate the capsule and pass beyond it into the surrounding adipose tissue. Such extensions beyond the capsule are not in any case marked. Large numbers of eosinophiles occur in the infiltration of the capsule and the adipose tissue. A large proportion of the cells replacing the lymphoid tissue consists also of eosinophile cells. In some nodes the number of eosinophiles is very great. Numerous degenerating lymphocytes are also present. In all of the hemolymph nodes the large lymphocyte cells are most numerous in the blood sinuses. The picture presented is that of a proliferation of these cells beginning in the sinuses and not in the lymphoid tissue.

Lungs.—The sections of the lungs present small areas of emphysema and atelectasis, but the alveoli in general are in a state of moderate distention. Anthracosis is slight or moderate. The larger vessels are distended and filled with white cells, the great majority of which are mononuclear and of the large lymphocyte type. They are of the same variety as those seen in the periosteal infiltrations, bone-marrow, spleen, etc. Eosinophiles are not so numerous as elsewhere; in some vessels but very few are found. As a rule the arteries are more distended with cells than are

the veins. The capillaries of the alveolar walls are likewise distended and filled with cells, the majority of which are large mononuclears or large lymphocytes. The general appearance of the sections is that of a leucemic lung. Scattered everywhere throughout the lung are small groups of islands of closely crowded cells, the majority being mononuclears of the "large lymphocyte" type. While many of these islands are in the immediate neighborhood of the large vessels, and undoubtedly in some cases occupy the site of the peribronchial lymph nodes, the majority show no such relations.

There are all possible transition stages between very small collections of cells lying upon the alveolar walls to larger masses filling several alveoli. In these larger masses the alveolar walls directly involved are ruptured or destroyed, the collection of cells filling up and distending several alveoli. Mononuclear eosinophiles are numerous in these masses, but occur to a less extent than in the other regions described above. The majority of the masses consist apparently of free cells; no reticulum can be made out. In some cases the outlines of the alveolar walls included in these cell masses are wholly lost, and there is apparently some fibroblastic proliferation extending into the group of cells, giving it something of a reticulum. The alveolar spaces about many of these small masses contain blood, sometimes also fibrin, and desquamated epithelium. In other parts there are collections of cells containing more polymorphonuclear forms and surrounded by areas of edema and hemorrhage. In these areas the smaller bronchi are filled with cells, the majority being polymorphonuclear. It is evident that such areas are to be interpreted as foci of bronchopneumonia. In the pleura there are present very small groups of mononuclear cells, filling distended capillaries and infiltrating somewhat the neighboring tissues. In general the picture presented by the lung is that of a leucemic condition with infiltrations of cells which are proliferating after the manner of tumor cells.

Heart.—This was preserved as a museum specimen by distending and hardening whole. No microscopic examination has yet been made.

Liver.—Many sections present the appearance of a leucemic liver, the intralobular capillaries being filled with cells, and the islands of Glisson's capsule in many places showing a cellular infiltration. These changes, however, vary greatly in degree in different parts of the organ. As a rule the liver lobules are somewhat smaller than normal, and the islands of Glisson's capsule relatively increased. There is no actual increase of connective tissue except in certain areas where the infiltrated capsule shows also a fibroblastic hyperplasia. The liver cords are atrophic in some areas, and the intralobular capillaries distended, and in many places crowded with cells of the "large lymphocyte" type. The central veins are dilated and in some instances also contain masses

of similar cells. In the cells of the central zone of the liver lobule there is an abundant, yellowish-brown, granular pigment which does not give the iron reaction (hematoidin). The cells of the peripheral zone contain a moderate amount of brown, finely granular pigment which does give the iron reaction (hemosiderin). In some lobules fat drops are also present in the cells of the peripheral zone. The liver cells on the whole show a slight degree of fatty degeneration. While some islands of Glisson's capsule show a marked cellular infiltration, others show little or none. The cells of the infiltration are of the type of the "large lymphocyte," and in the majority of cases have eosinophile granules. In some islands nearly every cell is an eosinophile. In the more densely infiltrated islands evidences of enlargement or growth are shown by the compression and condensation of the liver cells immediately about the island. The impression is gained of an infiltration in which the cells are proliferating.

Smaller masses of cells consisting in many cases chiefly of eosinophiles are also found scattered throughout the liver lobules. These apparently consist of collections of the atypical lymphocyte cells in the dilated capillary, with their further proliferation, and the resulting compression of the neighboring liver cells. Evidences of such pressure condensation and atrophy are clearly seen. In the larger of these masses some reticular proliferation is also seen. In some portions of the sections the collection of cells in the capillaries is so great that the latter appears as cords of deeply staining cells, while the columns of liver cells are in a condition of marked fatty degeneration or simple necrosis, staining a very pale pink or a deep red, the liver-cell nuclei being wholly lost. In these areas there are great numbers of degenerating lymphocytes in the capillaries. Relatively few eosinophiles are seen in the distended capillaries. In many capillaries there is present also a well-marked endothelial proliferation. It is to be noted also that the number of eosinophiles in the large vessels of the liver is relatively much less than in the infiltration in Glisson's capsule, or in the larger collection of cells in the lobules. In interpretation of the liver changes the condition may be regarded as due to the presence in the blood vessels of the liver of cells having the power to proliferate both in the vessels and after passing out into the connective tissue. The process is therefore analogous to tumor metastasis and infiltration.

Pancreas.—Sections show slight atrophy of the lobules, fatty infiltration of the interlobular connective tissue, and beginning post-mortem change. Many cells of the "large lymphocyte" type are present in the capillaries and small arterioles. No infiltration of the connective tissue was seen.

Stomach.—There is a moderate chronic atrophic gastritis with excess of mucous formation in the glands. The interstitial tissue is some-

what increased, and presents numerous small collections of cells which are chiefly mononuclear, many being eosinophile. These small collections of cells bear no especial relations to the lymphoid follicles. The latter are somewhat hyperplastic and contain an increased number of cells of the "large lymphocyte" type. Numerous eosinophiles are present in the follicles and also in the small groups of cells. The small tumor from the fundus consists of bundles of unstriated muscle and fibrous connective tissue running in irregular whorls (leiomyofibroma).

Intestine.—Catarrhal enteritis. The blood vessels of the intestinal wall are collapsed and empty for the greater part. Some contain masses or cords of cells of the "large lymphocyte" type. In the mucosa and submucosa there are very small collections of mononuclear cells, many of which are eosinophile. In one instance a larger mass of similar cells was found in the muscularis, small cords of cells extending from the main mass and infiltrating the surrounding muscle. The peritoneal surface is in many places covered with a layer of free cells, mostly of the "large lymphocyte" type, and containing many eosinophiles. The appearance is not that of an inflammatory exudate. The cells are clumped together in irregular groups, and probably represent free cells of the peritoneal cavity.

Kidneys.—There is slight atrophy, the glomeruli in the majority of fields being more numerous than under normal conditions. The cells of the convoluted tubules show a slight degree of cloudy swelling. The blood vessels of the medullary pyramids are dilated; many are filled with red blood cells with relatively few leucocytes; others are completely filled with cords or masses of cells of the "large lymphocyte" type. In these masses numerous eosinophiles are present. In the blood vessels of the cortex there is a similar distribution of cells. Throughout the cortex there are numerous collections of cells replacing the kidney structure, the largest being two to five millimeters in diameter. They are chiefly situated just beneath the capsule, which is thickened and infiltrated with cells of the same kind. From the main mass of cells irregular cords infiltrate the surrounding kidney tissue following the intertubular connective tissue. In the central portions of these masses all trace of kidney structure may be lost; occasionally an atrophic glomerulus or remains of tubules may be present. There is a distinct new formation of reticulum, and in some cases there is a picture of an interstitial nephritis immediately about the cell mass. About many of the latter, however, the kidney shows no recognizable changes. In others the tubules and glomeruli of the surrounding infiltrated zone are atrophic or compressed or even necrotic. The cells of these masses are almost wholly mononuclears of the type of large lymphocytes, many being eosinophiles. In some cases nearly all of the cells are mononuclear eosinophiles. The cells of the surrounding infiltration are of the same type.

While numerous individual degenerating cells are found, there is no degeneration *en masse* of any portion of these cellular foci. Smaller cell groups are also found throughout the cortex, usually in the immediate neighborhood of a capillary or arteriole filled with white cells. Some of the smaller groups consist wholly of mononuclear eosinophiles. Even in these smaller collections there is a well-marked proliferation of the kidney reticulum. The general picture presented microscopically is that of metastatic growth of cells of the large lymphocyte type, replacing the kidney tissues by means of a slow infiltrative proliferation.

Bladder.—Chronic cystitis. Thickening of mucosa and submucosa. Increase of leucocytes in many blood vessels, the cells being chiefly mononuclear and of the "large lymphocyte" type. No infiltration found.

Prostate.—Collections of mononuclear cells of "large lymphocyte" type in some of the blood vessels. About these there is a limited infiltration, in many cases containing many eosinophiles.

Testis.—Similar collections of cells are found in some of the blood vessels and similar small infiltrations near them. The lining epithelial cells show an unusual degree of pigmentation.

Spinal Cord.—There is some evidence of atrophy and degeneration. (A more complete study of the changes in the cord has been left for another time.) There is no cellular infiltration of cord or meninges. An increased number of leucocytes, chiefly mononuclear, is found in many of the smaller vessels.

Blood Vessels.—The blood vessels throughout the entire body contain an excess of white cells, the majority being mononuclear cells of the "large lymphocyte" type. The number of cells in the vessels differs greatly in different parts. In many places the distention of the lumen, the packing of the cells, and the infiltration of the vessel wall convey the impression of an intravascular proliferation. The proportion of eosinophiles is much less in the vessels than in the tissues.

Pathological Discussion.—Summing up the most important histological changes as shown by the microscopical study of this case, the primary condition appears to be a tumor-like hyperplasia of the red marrow of the vertebrae and sternum with secondary infiltration of the periosteum and neighboring structures, and the occurrence of metastasis-like infiltrations and nodules in the lungs, liver, kidneys, hemolymph nodes, tibial marrow, etc., associated with a cellular hyperplasia of spleen and lymph glands, and evidences of cell proliferation within the smaller blood vessels in various parts of the body.

That the changes in the marrow of the vertebrae and sternum are primary is shown by the fact that the normal marrow elements are completely replaced by the new cells, the marrow spaces enlarged, and the bony trabeculae rarefied, and by the direct extension of the cell growth in

the marrow spaces outward from the bone beneath and into the periosteum. The prevertebral chloromatous tissue is, therefore, nothing more than the periosteum, prevertebral fat-tissue, and fascia infiltrated secondarily by cells coming from the bone-marrow through the blood and lymph vessels, and by direct extension through openings in the bone. The chloromatous tissue over the sternum is similarly interpreted. The greater extent and larger mass of the green tissue along the vertebrae, together with the greater changes in the vertebral marrow spaces and trabeculae, would indicate that the vertebral condition antedated the sternal.

The cells of the tumor-like hyperplasia of the marrow correspond in their morphologic and staining characteristics to two classes of cells found normally in the bone-marrow, viz., cells of the type variously known as the *large lymphocytes*, *undifferentiated lymphocytes*, *large mononuclears*, etc., and cells of the *myelocyte type*, both eosinophile and neutrophile, the eosinophile forms greatly predominating. In general it may be said that about half of the new cells fall into the class of "large lymphocytes" and about half into that of the eosinophile myelocyte. Between the two all possible transition forms exist, and these may be classed with the type which they most resemble. From the character of the transition forms found the evidence is strong that the cells of the myelocyte type are derived from those of the "large lymphocyte" type. This supports the view of Ehrlich and others as to the origin of the myelocytes in the normal marrow.

The condition of the vertebral and sternal marrow may therefore be interpreted as a hyperplasia of the cells of the "large lymphocyte" type or of their parent-cells, a part of the new "large lymphocytes" resulting from this proliferation becoming transformed into myelocytes according to their ordinary course of development under normal conditions. The atypical character of the new "large lymphocytes" and myelocytes produced by this abnormal proliferation may be taken as evidence of the neoplastic nature of the process. This is shown particularly in the loss of the normal differentiation into normal neutrophile and eosinophile myelocytes. In so far as the vertebral and sternal marrow are concerned we have to deal therefore with a *hyperplasia of the large lymphocytes which replaces the other elements of the marrow and in the extent and manner of its growth assumes the character of a neoplasia*.

The neoplastic character of the marrow hyperplasia is further shown by the changes in the walls of the marrow spaces, the infiltration through the blood and lymph vessels, and the direct extension from the bone into the tissues of the periosteum and other neighboring structures. The cells of the infiltration are precisely identical with those of the marrow spaces; there is, therefore, an infiltration of the periosteum and

prevertebral tissues with cells of the "large lymphocyte" and myelocyte types, this infiltration being distinctly neoplastic in character. The infiltrating cells are proliferating in the tissue spaces, and are destroyed and replacing the tissues infiltrated. Such destruction is not of a very rapid or malignant type; the infiltrated tissues show but slight reaction, there is some connective-tissue increase, the walls of many vessels are thickened, and in some of the smaller vessels there is an endothelial hyperplasia. Nerve trunks and ganglia show a more or less decided atrophy, striped muscle fibers all stages of atrophy, and the fat cells of the infiltrated prevertebral adipose tissue also present various stages of pressure atrophy. About the nodular masses of the infiltration the tissues often show some degree of condensation and pressure atrophy. Aside from the purely mechanical effects, pressure and blocking of vessels, etc., the disturbance of the tissues infiltrated is remarkably slight. The growth of the cells through the tissues appears to be largely the result of a direct proliferation in the blood vessels and lymph vessels, the cells growing through the vessel walls, of proliferating in the tissue spaces after having passed out from the vessels. The slight effects upon the tissues may be explained by the assumption of a relatively slight antagonism between the body tissues and the new cells. In general the new cells of the infiltration may be regarded as free cells proliferating in the tissue spaces. Even in the larger and denser masses of the prevertebral region the reticulum is apparently the original reticulum of the tissue more or less thickened, and there is no new formation of blood vessels. The antagonism between the new-growth and the tissue cells must therefore be much less than in the case of the infiltrating tumors, carcinoma, and sarcoma.

From the microscopic appearances the proliferation of the new cells is chiefly by amitotic division. The numerous indentation and constriction forms of the nuclei, the double nuclei, etc., are taken as supporting this view. Division and growth of the cells within the blood vessels undoubtedly takes place. Throughout the body dilated vessels filled with masses of the new cells were found; in many of these the vessel walls is infiltrated or grown through with cells, and about the vessel there is a more or less well-marked infiltration. Evidences of proliferation within the lumen of the blood vessels are especially well marked in the liver.

The nodules in the lungs, liver, kidneys, hemolymph nodes, and tibial marrow appear to be true metastases arising chiefly through the intravascular proliferation of cells and the secondary invasion of the surrounding tissue. As in the prevertebral infiltration and metastatic nodules have but little antagonistic action upon the tissues at the site of the growth; there is but little reaction and but little new formation of reticulum and apparently no new formation of

blood vessels. In the kidney alone is the increase of reticulum at all pronounced; in this organ the secondary nodules are in many cases the seat of an interstitial change suggesting a chronic nephritis. In general the effect of the metastases upon the surrounding tissues is chiefly a simple atrophy. In the liver there is also some fatty degeneration and occasionally a localized necrosis about the cell masses. The cells composing the metastases are identical with those of the sternal and vertebral marrow and the periosteal infiltrations.

The blood vessels throughout the entire body show an increase in the number of white cells, the picture presented being that of a marked leucocytosis or leucemia. The greater part of these white cells in the vessels is found to be identical with the "large lymphocytes" of the primary marrow growth, the prevertebral infiltration, and the metastases. As mentioned above, there are evidences of the intravascular proliferation of these cells. The case therefore presents the picture of a *leucemia of the large lymphocyte type associated with a primary neoplastic hyperplasia of the bone-marrow, chloromatous infiltrations of the periosteum, and metastases in various organs. That the leucemia is secondary to and dependent upon the marrow condition there can be no doubt.*

Assuming that the process is essentially neoplastic in its character, it is evident that the new-growth is not identical with any of the known neoplasms. The terms lymphoma, lymphosarcoma, myeloma, etc., cannot be appropriately applied to it, nor is it satisfactory to class it simply as sarcoma. The individual character of its cells and its manner of growth give it a unique place as a neoplasm, and it must fall into a class of its own—a class to which probably all the leucemias belong—due to an abnormal proliferation of the parent cells of the white cells of the blood. To such tumors the term *myeloblastoma* or *leucoblastoma* might be applied, but a discussion of the propriety of such designations will be reserved for another time.

While accepting the neoplastic character of this case of chloroma, the fact remains that nothing is disclosed as to the etiology of such an abnormal hyperplasia of the bone-marrow elements. Intoxication or infection is not ruled out as the etiologic factor, and we are in exactly the same position here as we are in regard to the question of the etiology of neoplasms in general. Pending the discovery of the ultimate nature and cause of such hyperplastic proliferations, they may, with propriety, be classed temporarily with the neoplasms.

It is quite evident in this case that there is no picture of a general disease of the lymphoid tissues of the body, as in certain cases of lymphosarcoma, etc. The changes in the spleen and lymph glands are purely secondary. The germinal centers in these show no signs of excessive proliferation; on the other hand, they are in-

volved last of all. The metastases do not necessarily occupy the site of the lymphoid tissue of the organs in which they are found; but their location is determined independently by proliferating collections of cells in the blood vessels. This is shown particularly clearly in the lungs, stomach, and intestine, where the lymphoid nodes themselves are but little involved, while numerous small collections of cells are found along the arterioles. *The idea of a general lymphatic affection may be rejected here; the process is myelogenous in origin and has become generalized through the blood vessels. It is a general disease only in the sense that the blood vessels contain cells having the power to proliferate intravascularly and to set up infiltrations and metastases.*

The general myeloid character of the spleen and some of the hemolymph nodes may possibly be due to some effort at compensation for the lost marrow function. As a result of the replacement of the normal red marrow by the atypical lymphocyte and myelocyte tissue the formation of the red blood cells must have been greatly diminished. The extreme anemia shown by the patient is thereby explained. No evidence exists of any marked hemolysis. The pigment of the liver may be explained by the lessened splenic and hemolymphatic functions, although it is probable that the changed conditions of the blood plasma may have caused some direct hemolysis. The large numbers of individual degenerating large lymphocytes found everywhere may have given rise to some intoxication. It is very probable that the extreme anemia, either with or without the cooperation of these more doubtful factors, would explain the majority of the clinical symptoms. The involvement of the spinal nerves and ganglia by the infiltrations is also a very important factor in the explanation of the symptomatology. The eye and ear conditions might be similarly explained, though the anemia itself might account for both. The changes in the blood would explain the petechial hemorrhages and the endothelial proliferation. It may be well, however, to repeat here that the primary process—the atypical proliferation of the marrow cells—may be due to an intoxication having a marked myelotoxic action. Of such an intoxication we have no proof.

As to the nature of the green color of the bone-marrow and periosteal growths the case offers no explanation. No evidences of pigment were found in the cells, and no fatty bodies reacting with Sudan III or with osmic acid. The guaiac test was not employed. Hydrogen peroxide and ammonium hydroxide were not used upon the fresh tissue and had no effect upon the fixed material. The supposition that the color might be due to the large number of eosinophiles present would not be supported by other cases of chloroma in which it is definitely stated that few eosinophiles were present. The

best explanation of the color would appear to be that it is a true parenchymatous color.

Charcot-Leyden crystals were not observed in this case.

From the above study and discussion the following diagnosis is obtained:

Pathological Diagnosis.—Chloroma (primary hyperplasia of the "large lymphocytes" of the red marrow); secondary chloromatous infiltrations of the prevertebral and sternal periosteum; metastases in lungs, liver, kidneys, hemolymph glands, bone-marrow, etc.; secondary hyperplasia of spleen and lymph glands of thymus region; leucemia (large lymphocyte type); severe anemia; general atrophy and parenchymatous degeneration; chronic atrophic gastritis; lipomata of shoulders; myofibroma of stomach wall.

Epicrisis.—According to the commonly accepted definition at the present time chloroma is a "tumor belonging to the general class of sarcoma, more precisely to the group of lymphoma, lymphosarcoma, so-called leucemic and pseudo-leucemic tumors, etc., characterized by its green color and arising primarily in the periosteum, particularly in that of the cranium." The study of the present case as given above shows that this definition must be changed essentially, and that based upon our case a new conception of the nature of chloroma may be formed. In this case, at least, chloroma is a primary tumor-like hyperplasia of certain elements of the bone-marrow; the periosteal condition is purely secondary, and the character of the neoplasia does not warrant its classification as a lymphoma, lymphosarcoma, or simple sarcoma, but assigns it to a class of its own, a class of neoplastic hyperplasias arising from the atypical proliferation of the parent-cells of the white blood cells, hence belonging to the leucemias. Chloroma could therefore be primary in any part of the body in which white blood cells are formed, either under normal or abnormal conditions. From the reported cases of this condition it would appear, however, that the cells proliferating in chloroma are those that produce the large lymphocytes and their descendants and not those giving rise to the small lymphocytes. In addition, the constant localization of the green growths in association with the bones containing red marrow supports the view that chloroma is essentially myelogenous, and the existence of a primary chloroma of the spleen or lymph nodes remains to be demonstrated.

Of the previous writers upon chloroma Güm-bel appears to be the first to regard the affection as a primary bone-marrow disease. The recently reported case of Klein and Steinhaus (see above) is, however, a striking confirmation of the findings in our case and of our deductions. In their case the newly formed cells bear the character of neutrophile myelocytes, and represent a higher differentiation than in our own case in which the cells are about half large

lymphocytes and half mononuclear eosinophiles. It is evident, therefore, that different varieties of chloroma will exist in so far as the blood picture is concerned, just as in the case of the leucemias.

The "free" character of the cells of the chloromatous infiltrations and metastases, and of the blood vessels and tissue spaces would easily explain their disappearance under the influence of certain infections, intoxications, x-rays, etc., such as we know occurs in the case of leucemia. The action of such agents could be explained by the assumption of a destruction of cells exceeding or equaling their production, or by an inhibition of the proliferative activity of the parent-cells, or by direct action upon the etiological factor. The destruction of large numbers of the new cells might in itself give rise to an intoxication. Interesting questions are opened up along this line which must be solved later.

Without burdening this paper further with additional details and arguments we think we are justified in arriving at the following conclusions:

CONCLUSIONS.

1. *Chloroma is a tumor-like hyperplasia of the parent-cells of the leucocytes, primary in the red marrow, the periosteum being involved only secondarily.* The possibility of a primary chloroma in any part of the body in which white cells are formed must be considered.

2. As a result of this leucoblastic hyperplasia atypical leucocytes or leucocytes corresponding to some one of the normal types may appear in the circulating blood in varying number. Chloroma is therefore to be classed with the leucemias.

2. The white cells resulting from the atypical proliferation may in different cases attain different stages of differentiation. In some cases they may be of the large lymphocyte type, in others of the type of neutrophile or eosinophile myelocytes. At different stages of differentiation atypical forms may be produced. Whether a small lymphocyte type exists remains to be more definitely shown.

4. It is evident, therefore, as in the case of other leucemias, that the blood picture in chloroma may be very varied, and if this be used for a basis of classification it is possible to designate different varieties of chloroma.

5. It is also possible that in certain cases, or possibly stages, of chloroma the hyperplasia of the parent-cells may reach such a stage that the new forms do not get into the blood stream in such numbers as to give the picture of a leucemia. An aleucemic chloroma is therefore possible.

6. The essential difference between chloroma and other forms of leucemia is the more marked neoplastic character of the former and the formation of the green infiltrations and metastases. The following classification of chloroma is therefore proposed:

Chloroma (chloromatous leucemia).	{	1. Aleucemic chloroma (?).	{	1. Small lymphocyte type (?).	
		2. Leucemic chloroma		2. Large	
				3. Neutrophile	
				4. Eosinophile	
				5. Atypical.	
				6. Mixed.	

7. Chloroma is probably to be regarded as a more malignant form of leucemia. The white cells resulting from the atypical proliferation have the power of multiplying in the blood streams and in the tissue spaces, thus giving rise to masses of cells having the characteristics of metastatic tumors. It is probable that the proliferative activity is proportionate to the lack of differentiation. In the neutrophile and eosinophile forms we should expect a less marked tendency to proliferation; on the other hand, the large lymphocyte and atypical forms would show a greater proliferative capacity, and hence be more malignant. The aleucemic types theoretically would be the most malignant of all, and present characteristics more closely allying them with the sarcomata.

8. The atypical hyperplasia of certain of the elements of the bone marrow leads to the crowding out and replacement of the erythroblastic elements, and a consequent lessening of red-cell formation. Chloroma is therefore attended by and is the cause of a severe anemia, to which the chief symptoms of the disease are probably due. This anemia, while it may resemble pernicious anemia in many ways, is essentially an anemia of deficient hematopoiesis and not one of excessive hemolysis.

9. The malignancy of chloroma depends, therefore, chiefly upon the replacement of the red marrow and the consequent diminished red-cell formation. The slight antagonism between the new cells and the body cells would otherwise place it among the relatively benign growths, except in those cases in which important nerve structures are injured by compression by the infiltrations or through rarefaction of the bones. The large numbers of degenerating white cells present throughout the body may possibly give rise to an intoxication.

10. The cause of the green color remains unknown. It is probably a parenchymatous color. It is possible that processes morphologically like chloroma may lack the characteristic green color. Such cases should be classed with the non-chloromatous leucemias.

11. While classing chloroma temporarily as a unique form of neoplasm, the question of the ultimate etiology of the process is not settled. At present intoxication or infection can no more be ruled out than in the case of carcinoma or sarcoma. We are in the same position here as in the case of neoplasms in general.

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INTRACEREBRAL INJECTIONS OF ANTITETANIC SERUM IN TRAUMATIC TETANUS.¹

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TETANUS is strictly a localized infection. In the wound only a small number of the bacilli are found, and they rarely reach the blood or any of the distant organs.

The toxin has been proven to have a particular affinity for the central nervous system, especially the ganglion cells of the anterior horns of the spinal cord and medulla, with which it unites with such great firmness that it is difficult to separate it. Its presence has been demonstrated in the cerebro-spinal fluid. Roux and Borrel conclude that antitoxin injected subcutaneously remains in the blood, and is therefore unable to reach the toxin which is fixed in the nervous system.

Experiments by Meyer and Ransome also support this conclusion, explaining as they do the variation in time (from four to fourteen days) elapsing between inoculation with the toxin and the appearance of symptoms.

It would seem that tetanus toxin does not² reach the spinal cord through the blood stream,

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² *American Medical Journal*, p. 1622, 1904.

but by slowly passing along the axis cylinders of motor cells from their terminations. Apparently the myelin sheath acts as a quite impervious membrane, and the toxin enters at the end of the neuron where it is not provided with this sheath. Sensory nerves do not transport the toxin to the cord. The toxin enters the nerve endings from two sources; the first is at the site of the infection, where the toxin is most concentrated, and this probably explains why tetanic spasm frequently begin in the vicinity of the infected part, or are most marked at this point. The rest of the toxin is taken up by the blood and lymph and distributed, to enter the motor nerve endings in small quantities all over the body, and by passing along the motor fibers to enter the cord diffusely, leading to the generalized spasms. The latent period that elapses after injection of the toxin before symptoms appear is occupied by the passage of the toxin along the motor fibers to the spinal cord; if the toxin is injected directly into the spinal cord symptoms appear at once.

From the pathology it is therefore seen that the intracerebral injection of the antitetanic serum is the correct method of treatment for this disease. The following cases tend to confirm this conclusion:

Case I.—F. M., age twenty-one years, occupation shoemaker. Family and previous history negative.

Present Illness.—On May 8, 1903, while working in a livery stable, he stepped on a rusty iron nail, which entered the left great toe. The following two days no symptoms were noticed, except that the wound was tender to the touch. During the fourth day the patient complained of severe headache, associated with stiffness of the posterior neck muscles, which gradually increased in intensity. About 11 A.M. the next day trismus developed and at the same time he complained of pain in the masseter muscles and cramps in the legs.

In this condition he presented himself at police headquarters, and while there he had his first tonic spasm. At first the spasms came on about every fifteen minutes, but became more frequent, and at the time of admittance to the County Hospital they occurred every two or three minutes. The convulsions were so severe that the patient's body was in complete opisthalonos, although during these attacks consciousness was unaffected. At the time the operation was performed the temperature was 99° F., pulse 115, respiration 24. Had difficulty in swallowing and was unable to talk on account of the jaw being locked.

Examination, May 12, 1903.—Patient was conscious of his surroundings and his condition. All deep and superficial reflexes were increased. There was marked spasm of the masseter muscles causing lockjaw, the teeth being separated about one-half inch and the lower jaw unmovable even with the greatest pressure.

During the examination he had a convulsion

in which all the muscles of the body were affected, including those of respiration. All special senses normal. The pupils equal and responding to light and accommodation. Fundi normal.

On May 12 at 6 P.M. Dr. C. B. Lyman and Dr. J. K. Swindt made a small trephine opening in the right frontal bone and injected 20 c.c. of antitetanic serum into the right frontal lobe of the cerebrum. At 6:30 P.M., while under chloroform, he had a convulsion. At 1 A.M. May 13, he had a slight convulsion, with marked trismus. Chloral hydrate grs. xxx was ordered at this time on account of the severe twitching. At 7 A.M. May 14 slight twitching, rigidity of masseter muscles very much less than in previous attacks. After this convulsion chloral hydrate grs. xxx sodium bromide grs. xl were given every six hours.

The trismus, which was constant before the antitetanic serum was injected into the cerebral tissue, continued after the operation for seventy-two hours, when it ceased, as did the spasms. He remained in the hospital until May 26, 1903, when he was discharged, after making a complete recovery.

I am indebted to Dr. I. B. Perkins for the privilege of reporting the following cases:

Case II.—E. F., a boy, ten years of age, while playing with a toy pistol on July 4 last, exploded a blank cartridge, the wad of which took effect in the palm of the left hand, inflicting a somewhat lacerated wound and burying itself deeply in the tissues. He was taken to the police station, where the wound was dressed and subsequently cared for until it had entirely healed.

On July 23, nineteen days after the injury, Dr. I. B. Perkins saw the patient in consultation with Dr. A. A. Clough, who had just been called into the case. Marked trismus was present. During the tonic spasms which came at short intervals the jaws set tightly together. The posterior muscles of the neck, as well as the muscles of the back, became rigid, and the boy appeared to experience great pain. In the interval between the spasmodic attacks, the muscles of the jaws were not to rigid, but they did not relax sufficiently to allow the jaws to be separated. The muscles of the neck and back relaxed slightly in the interval, but contracted instantly on the approach of the spasms, drawing the head firmly backward.

Tetanus was diagnosed and immediate operation was decided upon. While on the way to the hospital slight jars of the vehicle caused severe spasmodic attacks. While being anesthetized, and after he was unconscious of his surroundings the rigidity of the muscles remained and the jaws could not be separated until he was completely anesthetized. When coming out of the anesthesia the trismus returned and was quite marked before the return of consciousness. Roux's point was selected for injecting the serum into the brain-substance. The patient being right-handed, a flap one inch in diameter was made over the right frontal bone, with the open portion of the shoe directed toward the temple. The periosteum

was lifted with the flap, and a trephine button one-fourth inch in diameter was removed. The needle of the syringe was introduced into the brain substance to a depth of two inches, with the point directed downward and toward the median line, and 10 c.c. of antitetanic serum was slowly injected during the withdrawal of the needle. Ten more cubic centimeters of the serum were injected in the same manner with the point of the needle directed forward and downward, and not toward the median line. The tissue flap was then sutured in position. The button of the bone was not replaced.

An incision was made in the hand at the point of injury and several small pieces of the wadding were removed.

Reaction following the operation was prompt, and although the trismus returned on the return of consciousness the spasms were not nearly so severe and subsided altogether after forty-eight hours.

Immediately following operation, sodium bromide grs. x and chloral hydrate grs. v were given by enema. This was repeated at varying intervals for several days, and then small doses of the bromide and chloral were given by mouth, sufficient being used to keep the patient sleeping most of the time. The temperature was 99° F. at the time of the operation, and did not go above 99° F. at any time. The highest rate of pulse was 108.

There was some stiffness of the limbs on first attempting to walk, which was two weeks after operation. This was not more marked on one side than on the other, and disappeared in a few days. At this time the patient appeared to be in a perfectly normal condition, having made a complete recovery.

Case III.—A. C., aged twelve years, school-boy. Always enjoyed good health. On July 4, 1903, while playing with a revolver, it exploded, the contents of the blank cartridge entering the right knee. He was cared for by his mother for fourteen days after the accident, but the symptoms became so alarming that Dr. J. M. Perkins was called to see him.

On examination it was found that he had had headache, cramps and stiffness of the muscles for the past two days. During the examination the patient had a general convulsion on an average of every fifteen minutes. While transporting him from his residence to the hospital the spasms occurred so frequently that it became necessary to use chloroform. On arriving at the hospital the pulse was 150, temperature 101° F., respiration 50. Twenty cubic centimeters of antitetanic serum were injected into the right frontal convolution.

Patient died two hours after operation.

In the three cases reported a trephine opening was made in the right frontal bone half way between the outer angle of the orbit and a point on the vertex, at the juncture of the line crossing over between the two auditory canals. The trephine opening should be small; a small slit made

in the membranes and the needle introduced two inches into the cerebral substance of the frontal lobe of the brain. In these cases the right frontal lobe was selected for the injection because the patients were right-handed, for if any paralysis followed the injection of the serum the center of speech would not be involved. The needle is directed forward and slightly downward.

The mortality of cases of traumatic tetanus treated by the ordinary medical means is very high, averaging about 90 per cent. In 147 cases treated by the intracerebral injection of antitetanic serum the mortality is 61 per cent.

The total quantity of antitoxin injected into the brain varies from five to 70 c.c. at any one time. In the three cases reported 20 c.c. were injected into the cerebral substance at once, and it is the belief of the writer that the success of this method of treatment depends upon the use of large quantities of the serum.

The danger in using serum intracerebrally is due to the fact that it acts as an irritant, and may cause a meningitis, cerebritis or a cerebral abscess. In a number of cases hemorrhages have occurred.

MEDICAL PROGRESS.

SURGERY.

The Bridging of Nerve Defects.—This is a broad subject, embracing as it does nerve repair and degeneration, primary and secondary neurorhaphy, stretching, bringing and so on, but it is nevertheless of the keenest interest to all, since injuries to the nerves are by no means uncommon. CHARLES A. POWERS (*Annals of Surgery*, November, 1904) records the history of his own case of nerve transplantation and records in detail the bibliography so far as it is accessible. His own operation consisted in the implantation of four inches of the great sciatic nerve of a dog in the external popliteal of a man. The operation was done in 1896, and it has, therefore, been eight years since its completion. The case was that of an eighteen-year-old boy, who had been severely injured by a railway train. The popliteal nerve was destroyed in about four inches of its course, and the extremities were, therefore, so far separated as to be impossible of union. The wound area was very dirty, so transplantation was not done until this had cleaned up. The great sciatic nerve of a 35-pound-dog was introduced. A very short time after the operation, sensation, both of temperature, pressure and pain returned. Within six weeks all forms of sensation were normal, but after the lapse of a year there was considerable atrophy of the muscles of the leg in the upper third. Abduction of the foot was, however, impossible. The results were good as regards sensation, but negative as to emotion. Seven years later, like conditions existed. The operation, therefore, may be looked upon as a complete failure as regards motion. In conclusion the author says that more case are needed before any definite conclusion can be reached as to the best means of treating the evils resulting from a gap in the continuity of a nerve. Neuroplasty and implantation should probably be preferred. Bone resection may be advisable in selected cases. Transplantation of foreign grafts should be abandoned, for it may be considered as definitely shown that a piece of nerve has no intrinsic superiority as a graft to any other kind of organized tissue.

Uncomplicated Gunshot Wounds of the Stomach.—Considerable traumatism in gunshot wounds is, according to V. OPPZ (*Roussky Vrach*, No. 35, 1904) always an indication for surgical interference, no matter how unfavorable the prognosis. The importance of the lesion lies not in the wound of the stomach but in the traumatism of the large blood vessels. The expectant treatment in uncomplicated wounds of the stomach alone is always followed in a certain number of cases by general peritonitis. Early abdominal section is considered by such surgeons as Mikulicz, Kukula and others, as the only method of treatment of gunshot wounds of the stomach in time of peace. If the wound is located in the abdominal walls corresponding to the site of the stomach, then it remains to decide as to whether it extends into the peritoneum and whether the stomach is invaded. At times it is not difficult to decide this question, but frequently it can not be easily determined. The author cites, among others, the case of a girl of eighteen years, who shot herself in an attempt of suicide. The wound was located along the left mammary line, below the nipple. Four hours later abdominal section was performed as the author suspected invasion of the stomach. Its anterior surface proved to be the site of a wound $1\frac{1}{2}$ cm. long, there was no prolapse of the mucous membrane, nor was there any exudation of the gastric contents through the wound. The posterior wall of the stomach contained no wound of exit, and no bullet was felt in the cavity of the stomach. The peritoneal cavity was filled with 800 c.c. of a warm saline solution. The postoperative course was uneventful. The sutures were taken off on the sixth day. Examination of the abdomen with X-rays failed to discover the whereabouts of the bullet, which, however, was found located in fecal masses in the rectum, and extracted without difficulty. When the symptoms point to an undoubted trauma of the stomach, operative interference becomes imperative so as to prevent a possible purulent peritonitis. However, Réclus is a warm defender of expectant treatment, as according to him the healing of the wound is frequently brought about by the falling into it of the mucous membrane which thus serves the purpose of a tampon. But Klemm has shown experimentally that such healing is of infrequent occurrence, as the peristaltic movements of the organ must necessarily prevent the closing of the wound. Abdominal section is indicated, in gunshot wounds of the stomach alone, only in recent cases. But if the patient comes under the surgeon's care on the third day and later, then the question as to the operation will depend on the peculiarities of the given case, for the absence of symptoms pointing to an invasion of the peritoneum during the first twenty-four hours will serve as an indication that the wound of the stomach does not permit the exudation of its contents into the peritoneal cavity.

Cancer of the Larynx.—The question of treating this dreadful lesion still remains open, but American and English operators are thoroughly awake to the importance of reaching some definite and satisfactory method both of recognition and of treatment. FELIX SEMON (*Lancet*, November 5, 1904), concludes first, that here as elsewhere early diagnosis is paramount. For this purpose it is absolutely essential that all idea that a patient suffering from malignant disease of the larynx shows grave constitutional symptoms early must at once be eradicated. For this time-honored belief must be sub-

stituted among laymen and practitioners alike the belief that persistent hoarseness occurring in middle-aged or elderly people is sufficient evidence, other things being equal, to justify radical operation. These are the cases which yield the most brilliant results. Although clinical manifestations and physical examination will almost invariably serve to give a correct interpretation at the hands of experienced examiners, no case should be operated upon radically without a confirmatory laboratory report of a portion of tissue removed for microscopical examination. This, however, should be done only if the patient previously consents to immediate radical operation in the event of the microscope confirming the clinical diagnosis. Nevertheless, as in other cases of malignant disease, the microscope is by no means an infallible guide in these cases. Should its evidence be negative or inconclusive, the intralaryngeal removal and microscopical examination of fragments should either be repeated, if necessary, several times, or if the clinical symptoms do not warrant postponement exploratory thyrotomy should be undertaken. The intralaryngeal method is from its very nature unsuitable for the radical removal of malignant new growths of the larynx. Subhyoid pharyngotomy, apart from being applicable in a very small number of cases only of malignant disease of the larynx, is still *sub judice* with regard to its advisability in such cases. Thyrotomy, if undertaken in suitable cases, and at sufficiently early period, and if performed on the modern lines which experience has shown to be successful, is a perfectly ideal operation in intrinsic cancer of the larynx. Hemilaryngectomy comes into question only when it is found after opening the larynx that mere thyrotomy will not suffice. When performed, it may be accompanied by removal of the tributary lymphatics, even if apparently not diseased. Total laryngectomy should be exclusively reserved for extrinsic, and for those cases of intrinsic cancer, in which both sides of the organ are affected, and in which the disease has proceeded too far to be eradicated by milder measures. When performed it should be accompanied by the removal of the laryngeal lymphatics on both sides of the neck.

MEDICINE.

Clinical Study of Actinomycosis.—The increase in frequency of this disease, following directly upon the concentration of inhabitants in our overcrowded cities, makes a recognition of the condition of particular importance. If infection should happen to be superficial, of course surgical measures are at once indicated. Free excision is the most rational method of treatment, unless, as is often the case, the growth is so situated as to render this impossible. In this event the medical treatment should be instituted and iodide of potassium appears to be a specific in early cases at least. ROBERT KNOX (*Lancet*, October 29, 1904), states that the remedy must be pushed rapidly to its extreme dosage limit. Apparently in this case, as in the case of others of the granulomata, the patients are singularly tolerant of the drug, it being almost impossible to induce iodism. In the case of two patients whose cases were reported by the author, one in five months took 16,320, or an average of 103 grains daily, without exhibiting any undue symptoms. Indeed the patient appeared to improve much while taking the iodide and missed the drug when it was omitted. The other patient took 40 grains daily and improved

under the treatment. The most important point in this condition, as in tuberculosis, is to make an early diagnosis. Unfortunately, this has not, up to now, been accomplished until the very latest stages, when, unless the case be susceptible to surgical treatment, the patients are beyond hope. A similarity which exists between actinomycosis and tuberculosis is unfortunate from a therapeutical point of view, because the one disease is so frequently mistaken for the other. The author points to the interesting fact that three members of a single family were the subjects of infection, this being another point in common with tuberculosis.

Bitemporal Hemiplegia.—Blindness on the temporal sides of the eyes, so that objects can be seen only with the nasal portion of each eye, is reported by FLAVELL B. TIFFANY (*Medical Fortnightly*, October 10, 1904), showing the anatomy, lesion and treatment of a case. The fibers from the temporal halves of the eyes do not cross, but come up to the chiasm and diverge to the base of the brain on the same side, while the fibers from the nasal halves of each eye cross and go to the base of the brain on the opposite side. Should a lesion be located at the chiasm involving the decussating fibers only, the part of the eye from which those fibers come would be affected, but the fibers from the temporal sides, as they do not cross, would remain uninvolved. In the case reported the eyes troubled him for five years, and on examination it was found that if the left eye were closed objects on the left or nasal side could be seen, all objects on the right or temporal side were invisible. Also, if the right eye were closed objects on the right were visible, those on the left being entirely out of view. No history of injury, syphilis or poison was obtainable, the patient had had rheumatism off and on, and an attack of grippe three years before. It is thought the lesion was due to the toxins, and an exudate due to grippe. The treatment consisted of one-half grain of pilocarpine, night and morning, inunctions of blue ointment and electrovibrator massage for several weeks, followed by a tonic of quinine, iron and strychnine. Massage being kept up two or three times a week for about six weeks.

Unusual Forms of Infectious Disease of Central Nervous System.—Successive degeneration of the spinal structure, neither inflammatory nor anemic in origin, observed by JAMES J. PUTNAM and GEORGE A. WATERMAN (*New York Medical Journal*, October 29, 1904), shows the effect of some toxins on the cord. Progressive impairment of sensation and motion and spinal reflexes which commenced in the lowest sacral segment rapidly advanced, through the lumbar, dorsal and cervical regions, to involve the medulla and ended in unconsciousness and death in about ten weeks' time. The progress of the disease was associated with irregular fever and pulse, leucocytosis and the various symptoms of myelitis. Post-mortem examination shows extensive destruction and degeneration of the cord, with formation of fat granules. The anterior roots are more degenerated than the posterior, but in no place is there evidence of inflammatory condition or impairment of nutrition. The blood serum culture proved sterile and no lesion was found in the brain. There are various forms of nervous disease caused by toxic influence, but it is unusual to see the different segments of the cord successively attacked.

Gastric Ulcer in Children.—One of the diseases from which the young are almost immune is gastric ulcer, especially in the chronic form. In fact, certain clinical authorities actually deny the occurrence of such an affection; nevertheless, E. G. CUTLER (*Boston Med.*

and *Surv. Jour.*, October 6, 1904), has been able to collect 26 well authenticated cases out of the literature, of which 24 had an autopsy report. The distribution of the ulcers was very variable, showing no marked predilection for any particular area. The etiology of the lesion is rather obscure. In some of the cases developing immediately after birth, of which there were six, the blackened, lacerated appearance suggested effusion of blood into the mucous membrane as the cause of the necrosis. In this connection it is noted that numerous instances of hematemesis or melena shortly after delivery are reported, in which the erosion was probably not so extensive as to prevent rapid healing. In six of the acute cases the ulcer was an intercurrent affection, occurring after several hours, or one of the infectious diseases. A remarkable fact is the preponderance of females, 18 in 29 cases, as in adults. The symptoms in infants are simply melena, hematemesis, restlessness and prostration. In older children, pain and tenderness, usually in the epigastrium, were premonitory symptoms. Vomiting occurred in 16 cases, and was always acid. Hematemesis occurred in 11 cases. The treatment consists in bed rest for three weeks, hot fomentations to epigastrium and a milk diet.

Are There Other Carriers of Malaria than Mosquitoes?—J. POWELL (*Med. Rec.*, November 19, 1904) agrees with several other recent writers who believe that mosquitoes do not form the only medium of transmission of malaria. From May 28 to Sept. 1, 1904, ten cases of tertian intermittent fever were observed among the enlisted men in the command at Fort Hamilton, N. Y. All but three of these cases occurred in the same company organization which last year also furnished more than its quota of cases. The barracks for this company are located on the highest elevation in the Post, overlooking the Dyker Meadows, a more or less salt marsh, and are situated but a short distance from the Post dumping grounds. They are also near the battery stables. With the exception of a single *Anopheles* killed in the writer's own quarters, careful examination of the stagnant water in this vicinity, as well as search throughout the entire Post failed to reveal any mosquitoes that differed from the *Culex solitans* or *Culex pungens*. The author therefore concludes that there is some other unknown factor concerned in the transmission of malaria.

The Value of the X-ray for the Medicolegal Expert.—The various ways in which the X-rays may be applied for this purpose are described by IMMELMANN (*Berl. klin. Woch.*, October 24, 1904). In addition to the application in accidental injuries, it is of signal value for determining the age of premature fetuses. The epiphyses of the long bones are known to remain permeable to the rays until after birth, with the exception of that of the distal end of the femur, which is visible at the thirtieth week of fetal life. As this is the time legally set for a possibility of the child having been viable, it is the duty of the one making the autopsy to fully demonstrate this point. It may also be necessary to determine whether the child has breathed or not, and this may be readily done by the X-rays. The author has shown that unexpanded lungs give a dark shadow like that of muscle, while lungs which have been filled with air readily permit the rays to pass through, and hence give no shadow. A number of other fields, including the important one of military surgery, have also been favorably exploited by this agent.

Treatment of Basedow's Disease.—An interesting case of this disease, in which the milk treatment ad-

vocated by Lanz was employed with excellent results, is reported by O. E. LADEMANN (*Am. Med.*, November 19, 1904). This consists of feeding patients afflicted with exophthalmic goiter with milk from thyroidectomized goats, and is based on the theory that in thyroid cachexia a poison is circulated in the economy, which under normal conditions by the thyroid secretion, and the secretions of such a cachexia, if used in Basedow's disease, might have an antagonizing effect on the poison of this affection. He treated a number of patients with milk from thyroidectomized goats with excellent results, the symptoms improved and the weight increased. The writer's case was a severe one, the exophthalmos and the goiter being very prominent, there was considerable emaciation, choreiform movements and a leucopenia. The milk was given in varying quantity, from 2 to 3 pints daily. Improvement was slow, but constant, and in three months she had gained about 13 pounds. The author believes that instead of the milk having a direct antagonistic action, the process is one of neutralization, or possibly combination, and the effects last only as long as the milk is given. Moreover, the severer the exophthalmic goiter, the more milk is required to neutralize. He does not consider that this treatment is a specific for Basedow's disease, but believes that further observations are necessary to establish its value. He would also suggest the use of desiccated thyroidectomized milk in the form of tablets, as preferable to that in its natural state, and with these he is at present experimenting.

Postdischarge Mortality Among the Patients of the Adirondack Cottage Sanitarium.—The permanent or ultimate results of sanitarium treatment of pulmonary tuberculosis are discussed by L. BROWN and E. G. PORE (*Am. Med.*, November 19, 1904), who base their conclusions on statistics of 1,542 patients treated in this institution. The real test of this treatment is not the immediate, but the ultimate results. The lack of uniformity in classification renders the comparison or the combination of the results of various sanitarium extremely difficult. The classification on the "ability to work" is beset by so many difficulties in America, that it is rendered of little value. The mortality among patients discharged in various conditions affords the best method of studying the permanent results of sanitarium treatment. Of those discharged apparently cured, 93 per cent. of the expected living are alive; of the disease arrested, 65 per cent.; of the cases discharged with active symptoms, 23 per cent. The death-rate among the apparently cured patients is during the first ten years about three times the ordinary death-rate. The death-rate among the patients discharged with the disease arrested increases during the first few years to many (10 to 15) times the normal death-rate, but afterward decreases. Nearly half the patients discharged with an active disease, died in the first two years. Patients between 30 and 40, when discharged apparently cured, seem to relapse less than younger patients. This tendency is little, if at all marked among the patients discharged with the disease arrested. Incipient cases seem to relapse less than advanced, when both are discharged in the same condition.

The Effect of Cold on the Arteries.—It is almost universally believed that the first effect of cold is to contract the arteries and that of moderate warmth, to relax them, but this has never been di-

rectly proven. Another point which has not been solved is, what is the condition of the vessels on either side of the part to which the stimulus is applied? An investigation of this character has been instituted by M. HERZ (*Berl. klin. Woch.*, November 7, 1904) with Gärtner's method of recording the pulse. The lever of the instrument was adjusted to the middle of the forearm, and then cold applied either above or below this point in the form of an ether spray. The results failed to support one of the most accepted tenets of hydrotherapy, as it was found that the large artery which carries the blood from the place where the irritant was applied, to the point under observation the sphygmograph, failed to contract under the influence of cold. The pressure in the small arteries distal to the point where the cold is applied, rises, because these vessels retract in the tissues supplied by them. On the other hand, the tension decreases in the small arterial twigs, central to the same point, because these vessels dilate. When warmth was used instead of cold, the results were so inconstant that no conclusion could be formulated. The results of these investigations are summarized as follows: The application of cold does not influence the diameter of a large arterial branch. The tension in the minute branches peripherally situated, is increased by the contraction of the capillaries, while in the centrally disposed set of vessels the tension is diminished, because of the dilatation of the corresponding set of capillaries.

Serum Therapy of Snake Bite.—With our increasing territorial acquisitions in and about the equator, all these problems of tropical medicine become more and more important. GEORGE LAMB (*Lancet*, November 5, 1904) says that it has been shown for a considerable period that animals treated with the venom of poisonous snakes, such as the cobra, for example, yield varying quantities of serum, which is antitoxic toward that poison. Calmette was the first to produce an antivenomous serum in sufficient quantities for therapeutic purposes. This was prepared with a mixture of snake venoms, in which mixture, however, cobra poison greatly predominated. He claims that this serum was active against the venom of all species of snakes, a claim based on the conception that all snake venoms are alike in physiological action, and only differ from one another in their degree of toxicity. Not long after this, it was shown by the author in India and by Martin, in Australia, that this claim was fallacious. From a long series of observations and of experiments, the author comes to the following conclusions: (1) Antivenomous sera are markedly if not absolutely specific, even between the venoms of species of the same genus, hence in any case of snake bite the serum prepared with the venom of that species which has inflicted the bite must always be used. (2) The difficulties in collecting the poisons of different species of snakes in sufficient quantity for purposes of immunization are apparently very great. (3) Up to the present the only sera which have been used practically are the one prepared by Calmette and the one prepared at this institute with pure cobra venom. Both these sera are practically specific for cobra venom. (4) As the neutralizing power of these two sera is not great and as a cobra can inject a large amount of venom, the serum must be given in large quantities; as much as from 300 to 400 centimeters, even when given intravenously, would be necessary in some cases. If given

subcutaneously, from ten to twenty times this amount would be required. It should, therefore, always be given intravenously. (5) Experiments on dogs and the records of cases of cobra bites in man bear out these calculations. (6) It is evident from the above considerations that it is a question as to whether the advantages to be gained by the serum treatment of cases of snake bite are at all commensurate with the cost entailed in the preparation of the sera.

Cause of Glycosuria After Morphine.—A dose of morphine will frequently cause the appearance of sugar in urine; and if morphine be given to dogs the urine will frequently reduce copper and bismuth, turn the plane of polarized light and ferment. The amount of glucose is small, and rarely exceeds 5 to 6 pro mille, or about two grams per day. R. LUZZATTO (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has discovered that this glycosuria is not caused by an increased permeability of the kidneys, as in the case of phloridzin, since the blood-serum contains considerably more glucose after morphine than normally. The influence of food is very slight, for glucose will be excreted if meat alone or meat plus sugar be given, and even during the fasting stage, if this is not prolonged beyond five or six days. After long-continued administration, a tolerance is established, the animal will no longer exhibit symptoms of poisoning, and glycosuria will not appear. Morphine, as well as chloroform, may act upon the medulla oblongata or the general nervous system, like the piquette of Bernard. Owing to this irritation, the liver will be freed of its glycogen, and this will then give rise to hyperglycemia and glycosuria. Or the glycosuria may depend upon an increased breaking down of proteins, or, lastly, the sugar may pass into the urine, owing to deficiency of oxygen. Morphine will increase the excretion of nitrogen, phosphoric and uric acids, but since the glycosuria stands in absolutely no relation to the degree of proteid decomposition, it is unlikely that the latter can be held responsible.

Phosphaturia.—Phosphaturia is a physiological phenomenon if it occurs after a large meal, after repeated vomiting or gastric lavage. In the following conditions, a pathological excretion of phosphates may occur: (1) In chronic inflammatory affections of the genito-urinary tract, particularly chronic gonorrhea. (2) In neurasthenia and other nervous diseases. (3) In chronic dyspeptic and rheumatic affections. In several cases observed in children, the following symptoms were noticed: Milky turbidity of the urine, emaciation, anemia, loss of appetite, headache, perspiration. Marked nervous disturbances were itching, paresthesias, pains in the joints, increased reflexes. Circulatory symptoms, such as palpitation of the heart, rapid pulse and murmurs were not uncommon and umbilical pain, diarrhea, mucoid stools and vomiting were observed. The discharge of urine was not interfered with, the amount and specific gravity were normal. Microscopically, amorphous and granular phosphates, occasionally triple phosphate, neutral phosphate of lime and oxalate of lime were found. The reaction was alkaline, amphoteric or faintly acid. Four possibilities may be quoted to explain the presence of these salts in the urine: (1) A deficiency of acid; (2) an excess of alkali; (3) an excess of calcium or magnesium; (4) a combination of the above factors. Physiological albuminuria is thus easily explained. After an excessive meal or

after gastric lavage, so much acid is removed from the stomach, that the blood is too alkaline. Vegetables, on the other hand, will increase the alkali in the blood directly, since they are rich in carbonated salts, while patients with genito-urinary disease often take large amounts of alkaline water and milk. Neurasthenics frequently suffer from chronic constipation, and for this reason consume large quantities of vegetables, which would easily account for the phosphaturia. There is, however, a separate class, where the phosphaturia is the primary condition. In children, at least, this is not really a phosphaturia, but a calciuria, since the amounts of phosphoric acid would be normal, but the lime increased, sometimes to five times its normal amount. The nervous symptoms are probably due to a retention of lime, since administration of lime will aggravate the condition, without affecting normal individuals. The treatment consists chiefly in the proper regulation of the diet. Potatoes, apples, cereals and meat are permitted, since poor in lime, but milk, eggs, leguminose vegetables, berries and fruits should be avoided. Meat may be allowed two or three times daily, together with butter and cream, much sugar and pastry. In intractable cases, rest in bed may do good. Muritic and phosphoric acid have been recommended, but have little influence on the condition.

Importance of Iron in Animal Economy.—Iron is an element without which life would be impossible, and it is therefore not surprising that it has been detected in every organ of almost every animal and in a great variety of the higher and lower plants. Thus, A. BALDONI (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has detected an appreciable percentage in organs free from blood, such as the cornea, lens and vitreous body of the eye. The muscles and liver of animals not possessing hemoglobin, such as the lobster, are quite rich in iron. Finally, Iceland moss was examined to determine if this drug really possesses the therapeutical value in anemia so frequently claimed for it. The average figures obtained were only 0.0198 per cent. of the dried moss, which is about five times less than has been found by other observers.

Tubercle Bacilli in the Urine.—ROSENBERGER (*Am. Med.*, December 3, 1904) examined the urine tubercle bacilli in twenty-five cases of pulmonary tuberculosis, the residual urine being obtained by means of a sterile catheter. In no case was tuberculosis of the genito-urinary tract diagnosed or suspected, but the sputum always showed tubercle bacilli. Careful examination revealed a few, isolated tubercle bacilli in five cases. No clumps nor groups of bacilli were observed, as usually seen in cases of tuberculous cystitis, nephritis, etc. Intraperitoneal inoculations were made into guinea pigs, 2 c.c. of the sedimented urine being used. As a result of the inoculations three animals died, and in one of these no tubercle bacilli had been found in the urine of the individual. The surviving animals were kept under observation for three months and then killed; in not one of them was there any evidence of a tuberculous process. Rosenberger concludes that although the small number of cases scarcely warrants a positive assertion, still it is safe to say that in pulmonary tuberculosis the tubercle bacillus is found in the urine in only a very small percentage of cases.

Two Cases of Henoch's Purpura.—O. C. SMITH (*Med. Rec.*, December 3, 1904) describes two cases

of this disease. The first was that of a boy of nine, who developed purpuric spots on the legs and abdomen two days after a blow on the abdomen. In the course of the next week there were severe abdominal pains, the purpura became general, and the albuminous urine contained blood. Two weeks after the onset of the symptoms there was evidence pointing to intestinal obstruction, and a laparotomy was performed. The intestine was found collapsed and presenting many ecchymotic spots. The intestines were lifted up and douched with salt solution, and a quantity of this was left in the abdomen. Relief of the intestinal symptoms followed the operation, but a month later the patient died of the renal condition, which had not been improved by decapsulation of both kidneys. The other case, a boy of sixteen, presented symptoms in general similar to those of the first patient, and was also treated by laparotomy and filling the abdomen with salt solution. Improvement followed, and he was discharged cured four weeks later. From a consideration of the cases described in the literature, numbers of which presented abdominal symptoms, the author believes that Henoch's purpura should not be regarded wholly as a medical disease, and owing to the possibility of pathological changes in the stomach and intestinal walls, giving rise to conditions susceptible of surgical treatment, he considers that in cases presenting grave abdominal symptoms, exploratory laparotomy is not only permissible, but is indicated. An important deduction from the author's two cases is that in each one filling the abdomen with salt solution was followed by a re-establishment of peristalsis in the parietic intestine, and in the cessation of vomiting.

THERAPEUTICS.

Skimmianin, a New Alkaloid.—By a comparatively simple process, J. HONDA (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has succeeded in isolating skimmianin from *Skimmia japonica*, a plant indigenous to Japan. Injection into frogs, this alkaloid causes muscular spasm at the site of application, gradually extending to the neighborhood. The reflex irritability is first increased, then diminished, but the actual work done by the poisoned muscles is not increased. The pulse is slowed, even after atropine, probably due to direct action on the heart muscle. In rabbits the chief symptoms are opisthotonus, dyspnea and contraction of the pupils, which disappear rapidly after non-fatal doses. In chloralized animals a fall of pressure may be observed, which is due to direct action on the heart, while the subsequent rise must be ascribed to compensatory contraction of the peripheral vessels. The alkaloid behaves like a feeble base, but is not allied to caffeine, since it does not increase the working power of muscles and possesses no diuretic action.

Roentgen Treatment of Malignant Diseases of the Breast.—C. L. LEONARD (*Am. Med.*, December 3, 1904) points out the analogy between the process of healing in atrophic scirrhus of the breast, and that resulting from the Roentgen treatment. He believes that the indications for early thorough surgical removal of the malignant tissue and the adjoining lymphatics have not been changed by the advent of the Roentgen method of treatment. Roentgen treatment in malignant disease of the breast can as yet point to only one class of cases in which its use is indicated primarily. In this class surgical intervention is contraindicated by modern

pathology and clinical experiences. In all other cases, surgical removal of the breast with the tumor and the adjacent lymphatic areas is always indicated. Wherever possible an attempt should be made to remove the greater part of the malignant tissue, even though the operation can be only palliative. With the aid of Roentgen treatment even large ulcerating areas can be healed, while the toxemia is lessened and the Roentgen treatment facilitated. The value of the milliamperemeter, as a basis for comparing technic in radiotherapy, cannot be overestimated. Its invention makes a marked advance in treatment possible. The results obtained in favorable cases can be measured by this standard, and similar conditions can be produced in other cases, not only by the operator himself who produced them, but by any one possessing the requisite technic and apparatus. It will simply be necessary to know the dose employed in terms of standard dosage. Of the twenty-six cases of malignant diseases of the breast reported in his paper, the patients having been under treatment since 1900, twelve are dead and two, not heard from, are also probably dead. Nearly half the patients are living to-day. One, however, cannot expect to live more than six months. One has lived two years, and yet disease is certainly present. Nine remain apparently cured. Seven patients, or a large proportion, considering their condition when first seen, have lived over a year after their operations. This is not long enough to determine the permanence of the cure, but the results are encouraging, being better than those of the average operator, and the results obtained in some of these cases, even if the cure is not permanent, are enough to justify the employment of this method and to attest its value.

Nitroglycerin in Erysipelas.—This drug has been used with apparently good results by J. W. WHERRY (*Jour. Am. Med. Ass'n*, November 5, 1904). The cases were all well marked and the writer gave 1-100 gr. every three or four hours. An ointment of zinc oxide and ichthyol was also used, but this served merely to allay the discomfort. All these cases presented several features in common as the result of this internal treatment—a reduction of temperature, moist skin, good appetite, steady pulse after the first day, absence of prostration, and fairly rapid disappearance of the inflammatory process. The writer recommends it for further trial.

New Treatment of Rheumatism.—Injections of sterilized sodium salicylate, directly into the joints in articular rheumatism are highly recommended by A. SANTINI (*Wien. klin. therap. Woch.*, September 4, 1904). For the elbow-joint the needle is introduced obliquely above the olecranon, and for the knee by either side of the patella. In the hip and shoulder-joints it is often difficult to reach the interior of the joint; in such cases a periarticular injection is preferable. The strength of the solution should be three per cent., so as to be isotonic with the blood, and three to four cubic centimeters are usually sufficient. When the synovial cavity is distended with fluid, it may be advisable to withdraw a little serum. The only untoward symptoms noticed were a slight temporary increase of pain. In all cases a cure was accomplished much more rapidly than after internal or endermal use of salicylic acid.

Synthetic Adrenalin.—Synthetic adrenalin, or at least synthetic substances acting like adrenalin or suprarenin, have been prepared by ROSER (*Pharm. Ztg.*, XLIX, p. 874), and described by H. Meyer at the In-

ternational Congress of Physiologists at Brussels. The pharmacological investigation of the synthetic, chemically methylamino-ortho-dioxyacetophenon, showed that qualitatively it exhibited an effect exactly like that of suprarenin, not only so far as the peripheral vasoconstricting action following intravenous injection is concerned, but also as to the action on the smooth muscular fiber, and the causation of diabetes. It was further found that a series of homologous compounds (amino-ketones, ethyl-amino-ketones, etc.) exert a similar action.

PRESCRIPTION HINTS.

Hemorrhoids.—The internal variety are rendered painless for a period of from two to three hours by a suppository of the following:

℞ Orthoformi.gr. xv (1.0)
Ext. belladonnæ.gr. i (.06)
Ol. theobromæ.q.s.

Fiat in suppos. No. X.

Or, if there be a tendency to slight hemorrhage from minute fissures, etc.:

℞ Acidi gallici.gr. xv (1.0)
Ext. opii.gr. i (.06)
Orthoformi.gr. xv (1.0)
Ext. belladonnæ.gr. i (.06)
Ol. theobromæ.q.s.

Fiat suppos. No. X.

Gouty Headache.—This dyscrasiac condition is often difficult to overcome. Those patients with accompanying anemia being particularly refractory. The following prescription has given relief to many:

℞ Sodii phosphatis.gr. xv (1.0)
Acidi salicylici.3v (20.0)
Ferri pyrophatis.gr. lxxv (2.3)
Aquæ.q.s. 3vi (180.0)

3iv qr. four hours.

Palatable Syrup of Quinine.—*Merck's Report* gives the composition of such a syrup, as follows:

℞ Quinine sulphate.2 dr.
Cinchonine sulphate.2 dr.
Dil. sulphuric acid.to dissolve
Oil orange.to flavor
Saccharin.8 gr.
Alcohol.2 fl. oz.
Glycerin.2 fl. oz.
Syrup.to make 16 fl. oz.

Dissolve the quinine and the cinchonine in 4 fl. oz. of the syrup with the aid of the acid. Dissolve the oil of orange (or other suitable flavoring) and the saccharin in the alcohol and glycerin, and add this to the quinine solution; finally, add enough syrup to make the mixture measure one pint. Such a syrup is of value as a tonic in the malarial cachexia and in other adynamic conditions.

Multiple Warts.—Dr. Mantelin (*Merck's Report*) reports the case of a little girl of eleven years, who had had for three years numerous warts on her lips and hands; and these warts were completely cured in one month by the administration of 10 gr. of magnesia daily, and the following local application:

℞ Chloral.90 gr.
Acetic acid.90 min.
Salicylic acid.1 dr.
Ether.1 fl. dr.
Collodion.4 fl. dr.

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SATURDAY, DECEMBER 10, 1904.

ERYSIPELAS: A MUDDLE.

For a number of years prior to 1901 erysipelas appeared in the reports of the New York Department of Health under the classification "Septic diseases," the group including erysipelas, septicemia, pyemia and puerperal fever. In 1901, for some reason not explained, the disease was removed from this classification, and in the last annual reports of the Department, erysipelas takes its place in the list of general epidemic diseases.

There have been no epoch-making bacteriological discoveries concerning erysipelas in the period referred to, and so far as we are aware, the Health Department has not recently introduced any new method having for its end the prevention of epidemics of the disease in question; in fact, erysipelas is a disease to which health officials, whether in New York City or elsewhere, pay but little attention. In this city the disease is nominally notifiable; but it is not one of those which physicians are really expected to report, and no official attempt is made to insure isolation or to control methods of treatment.

Obviously, the number of cases occurring in the course of the year cannot be stated. The death-rate, however, does not tend to increase,

and it would appear from a study of the following figures that the easy official attitude toward erysipelas has not proved inimical to the public welfare:

Year.	Number of Deaths Due to Erysipelas.	Estimated Population of Greater New York.
1899.....	230	3,550,053
1900.....	316	3,444,675
1901.....	198	3,536,517
1902.....	186	3,632,501

The practice of hospitals in this city regarding erysipelas reveals an interesting state of affairs. Bellevue Hospital, with its erysipelas ward of 20 beds, 10 for men and 10 for women, represents the only special provision made by or in the city for the treatment of the disease. The private charitable hospitals do not admit cases of erysipelas, and cases developing in their wards are, in many instances, transferred to Bellevue Hospital for treatment. Some hospitals consider isolation to be indispensable in all cases; others take alarm when the disease develops in surgical wards, but are indifferent when it makes its appearance among medical cases. In the smaller private hospitals, cases of erysipelas are not openly accepted, but are often secretly admitted under other names.

The variation in the practice of institutions reflects the uncertainty of the medical mind on the subject in question. Abbott, in his "Hygiene of Transmissible Diseases," makes no mention of erysipelas; the omission can hardly be accidental. W. Gilman Thompson, in his "Practice of Medicine," describes erysipelas as a distinctly contagious disease, and urges extreme measures of precaution upon those who have been in contact with cases. His recommendation that physicians who have handled erysipelas subjects "should not visit puerperal or surgical cases for several weeks," aptly illustrates the dread of the disease which, if not general, is at least widely shared. These citations are purposely drawn from textbooks in actual use in representative medical schools. In a practice of several years, in one of the large hospitals of New York City, we have not once seen a clear case of the direct transmission of erysipelas from one patient to another, either in the medical or the surgical wards. But older surgeons are thrown into wild alarm at the sight of the dread eruption, recalling the fatal epidemics of their younger days. Content with the precautions commonly taken in large surgical wards, where clean cases and pus cases are treated side by side, surgeons will calmly disre-

gard the presence of streptococcus in the ward until, in a susceptible case, erysipelas appears; at that moment the case becomes one to be shunned, though the wound conditions and the chances of infection are unchanged.

The correct handling of cases of erysipelas is a practical clinical question, which has not been made clear by bacteriological research. At present the disease cannot be said to be epidemic; but it is important enough to merit greater attention on the part of the Health Department, through whom, more readily than by any other means, the practice of hospitals and the profession in regard to the treatment of the disease can be placed on a sure and sane footing.

VACCINE VIRUS AND CHLOROFORM.

DURING the epidemic of smallpox, in recent years, so much vaccine material was called for on several occasions that a sufficient amount of it was not on hand duly prepared for distribution. As a consequence, in some few cases, vaccine virus insufficiently glycerinated, that is, which had not been subjected for a sufficient period to the antiseptic action of glycerin, was distributed. As can be readily understood, this carried with it a certain danger of infection, because many of the micro-organisms in the vaccine material had not been destroyed. Sore arms were the result with an obscuration of the effectiveness of the vaccine material, since the mere occurrence of a deep scar does not by any means give evidence of successful protective vaccination, but rather of secondary infection.

There has been a growing impression for some time that if another agent besides glycerin could be employed, which without eventually impairing the efficiency of the vaccine material, would destroy all other germs present, it would be an important discovery and would fill a distinct want.

Such a material seems to have been discovered in chloroform. In a recent report, Dr. Alan B. Green, of the English government lymph laboratories, said: "Since April, 1903, the date of my preliminary note on this subject, the preparation of calf vaccine by the chloroform process has been carried on at these laboratories, and a large number of vaccines have now been treated by this method. These lymphs have been freed from their non-spore-bearing extraneous bacteria within a period ranging between one and eight hours after their collection from the calf and have, subject to the usual tests, been issued

for general vaccination purposes about two weeks after collection. Their use has resulted in a large proportion of successful vaccinations."

This very favorable report has been confirmed by some experiments in the Health Department of Chicago, as reported in the recent bulletin of that Department. According to the crucial tests made in Chicago, chloroform-vaccine was used by the municipal health board physicians five days after it was removed from the calf. One day was required to prepare it, one day to ship, two days to test it bacteriologically, and one day to send it to the clinician who made the clinical test. Ten days later his report was that this chloroform vaccine material had given 100 per cent. of successful primary vaccinations. Besides the rapidity with which the vaccine may be prepared, there is another and decided advantage in that the length of time during which the vaccine matter remains active is considerably prolonged. Under the action of glycerin, foreign micro-organisms present are soon destroyed, but the organisms of vaccine are rendered inert after a time and, consequently, unused vaccine has to be withdrawn from the market. With chloroform, the action may be allowed to continue until all foreign micro-organisms are destroyed, and then no further action takes place. Consequently there is thought to be no deterioration of the vaccine material.

These are as yet only preliminary reports, although the tests to which the material has been subjected are distinctly sufficient to justify very hopeful conclusions. Vaccine material in its purest possible state, without admixture of any foreign living material, especially, is a supreme desideratum of modern times. Since the medical profession is insisting on the necessity for every individual being vaccinated, and since, as a consequence of this insistence, laws have been passed in most of the civilized countries of the world practically making vaccination compulsory, it is an absolute necessity that vaccine material should be prepared in such a way as to carry with it no danger except the infinitesimal risk involved in the vaccination process itself. The new agent seems to promise a notable advance along these lines, and, therefore, its possibilities should be exploited with the greatest care. Vaccine manufacturers may be depended on to be properly enterprising in this as they have been in the past, and the medical profession must be ready to help further demonstrations in the matter.

MEN OF SCIENCE.

THE third of the annual meetings of "Convocation Week" will be held in Philadelphia from December 27 to 31, in the ample buildings of the University of Pennsylvania. Twenty-five different scientific societies will combine to make that locality during that week the center of American philosophy and science. The associations of scholars which will be represented are the ten chapters of the American Association for the Advancement of Science with their more than four thousand members; the American Philosophical Association, Psychological Association, Physiological Society, Anthropological Association, Chemical Society, Folk-Lore Society, Physical Society, Society of Naturalists, Society of Zoologists (Eastern Branch), the Association of American Anatomists, the Association of Economic Entomologists, the Astronomical and Astrophysical Society of America, the Botanical Club of the A.A.A.S., the Botanical Society of America, the Entomological Club of the A.A.A.S., the Fern Chapter, the Geological Society of America, the Societies of American Bacteriologists, for Horticultural Science, for Plant Morphology and Physiology, for the Promotion of Agricultural Science, the Sigma Xi Honorary Scientific Society, the Sullivant Moss Chapter, and the Wild-Flower Preservation Society of America. The chapters of the American Association for the Advancement of Science represent, respectively: A, mathematics and astronomy; B, physics; C, chemistry; D, mechanical science and engineering; E, geology and geography; F, zoology; G, botany; H, anthropology; I, social and economic science; and K, physiology and experimental medicine.

This truly rather formidable list is given in full to emphasize the variety of learned and cultural interests which meet annually just after Christmas in some one of our important cities for mutual mental improvement and intellectual enjoyment. And these great meetings, characteristic of American democracy, give even more than that, for they allow former friends, schoolmates, colleagues, sundered by academic appointments and by other means, to meet under sympathetic conditions and where each one has for the few days left his burdens behind him that he may partake of the other, but unlike mental burdens of his fellows! These meetings afford the recreation which variety and a journey bestow, and no one better than the physician

knows how a week or four days out of the middle of his busy winter would cheer his soul for the months to come.

It is often far too easy for the practitioner to make even himself believe that his "practice will not allow him to get away," that he "can't afford the time," etc. Observation shows that the men who accomplish most are not the "grinds" of the world and that proportionally to the mental difficulty of their pursuits the more thought there is in an occupation the more necessary is a degree of independence of routine and a fair proportion of recreation. It is on this substantial basis of physiology, that the conscientious physician owes it to his patients not less than to himself and his family to escape occasionally into an atmosphere at least different from that he daily breathes.

Now it would be natural at first for many medical men to say that at such a meeting they would be engaged in only what they need change from, namely, science. A glance over the list shows one, however, so large is the variety of interests concerned that the physician may indulge in the science in which he is an amateur with reason and with benefit. The American Association for the Advancement of Science welcomes new members from the medical profession, and offers them practically the whole range of science to choose from. Fortunate, the busy practitioner who has geology for a hobby and who, therefore, finds himself time every summer for a month in Nova Scotia or among the White Hills. Wise is the busy physician who, despite the jokes of his daughters and the sly reproaches of his neurasthenic women patients, builds up an herbarium of his own, collecting between Texas and Labrador. To the philosophically minded there is plenty to be heard at these meetings which would make his cortical neurones vibrate in a way to delight Forel himself, were not "the neurones" things of the past. The Anthropological Association and the Folk-Lore Society discuss matters of absorbing interest to every physician. None of these societies is apt to refuse membership to the medical graduate who applies, seriously intending to contribute to its advancement.

The monetary cost is small. The railroads furnish a round trip for one-and-one-third fares. The hotels pretend at least to reduce their rates. The entrance fees and the annual dues are nominal, and in most cases return rather more than

their value in literature. Thus every member of the American Association for the Advancement of Science paying the dues of three dollars a year, is entitled to the weekly magazine, *Science*, as the official journal of the Association.

One has much to gain and little, broadly speaking, to lose, if he attends these annual meetings held East or West for four days after each Christmas. Besides his personal gains (and his wife's, if he has one and she goes along), the physician has the pleasure of feeling that he is contributing to the interest and influence of science in America. This is no mean benefit when one considers the predominant part which science has taken, and is more and more largely taking in the development of our country and of the world. The practitioner of medicine, like other men, is apt to get into ruts from which it is a fact of general experience that the majority never escape. These enthusing meetings of the scientists of America offer one way out. It is not too late for many to join the large but harmonious scientific family party, at the University of Pennsylvania on the second day after Christmas. Physicians are apt to forget that with all their art, the practice of medicine makes them men of science—every one.

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Pritchard.—Dr. W. B. Pritchard has been appointed Professor of Neurology at the Polyclinic Hospital and Medical School, to occupy the chair recently vacated by the resignation of Dr. B. Sachs.

Zoological Pitfalls.—The Middleton Goldsmith lecture of the New York Pathological Society was delivered at the New York Academy of Medicine, on November 30, at 8:30 o'clock, by Dr. Charles Wardell Stiles, chief of the Division of Zoology, Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service. The subject was: "Zoological Pitfalls for the Pathologist." A full analysis of the lecture will be given later.

Pan-American Delegate.—Dr. Frederick Holme Wiggin has been appointed a delegate to represent the New York State Medical Association at the coming meeting of the Pan-American Medical Congress, to be held in Panama.

Sanitary Conference.—The Fourth Annual Conference of Sanitary Officers, under the direction of the State Department of Health, will be held in the Assembly Chamber of the Capitol at Albany, December 15 and 16, 1904. For the purpose of securing a uniform system of sanitation, and increasing the efficiency of local boards of health, this department is anxious to secure the attendance at the conference of as many health-officers and registrars as possible. Under Section 21 of the Public Health Law, local boards of health are authorized to allow the reasonable expenses of health-officers in "going

to, attending and returning from the Annual Sanitary Conference of Health Officers."

Report of Presbyterian Hospital.—A summary of the work done at the above institution during the past two years has just been issued. Especial prominence is given to the financial statement which states the great need of more money to carry out plans for more efficient service. The cost per day per patient was \$2.48½, as compared with \$2.50¾ during the previous year. The actual cost to the hospital of free treatment during the year was \$150,110.66, as compared with \$149,984.43 for the previous year. The most important event in the hospital life of the past year has been the opening of the Florence Nightingale Hall, the school for nurses, on Seventy-first Street, which, fully equipped, cost \$410,000. It was given anonymously by one of the managers. Transfer of the nurses to their new building has vacated the ward space in the hospital previously occupied by them. This would provide more than 100 beds for that number of new patients. These wards must remain closed and the beds unoccupied until current and continuing means for their support are provided.

Rockefeller Research Laboratory.—The cornerstone was laid last week for the Rockefeller Institute, which was founded by John D. Rockefeller, Sr., with an initial endowment of \$200,000, since increased to \$1,200,000, and the promise of more when needed. The institute was founded for pure research into the cause of disease. For several months this research has been carried on by students in this city and other cities. Dr. Simon Flexner, the chairman of the governing board of the institution, has gathered about his a carefully selected body of men, all of whom are known in some branch of medical science. The trustees a year ago bought a site on a tract of land lying along the East River from Sixty-fifth to Sixty-eighth street and extending back to Avenue A. This tract belongs to Mr. Rockefeller. The site was purchased from him with the money he had supplied, and is not an additional gift to the institution. The cornerstone laid in Sixty-fifth Street near Avenue A is for a laboratory in which special investigations of the bacteria of disease will be carried on. The stone was laid by Dr. Flexner, assisted by the other officers of the institute, T. M. Prudden, professor of pathology at the College of Physicians and Surgeons; Dr. L. Emmett Holt, secretary of the institute, and Dr. C. A. Herter, treasurer of the institute and professor of pharmacology at the College of Physicians and Surgeons. Within the cornerstone were placed a photograph of Mr. Rockefeller, a history of the organization of the institute, copies of the current medical magazines and daily papers. There will be a public dedication ceremony when the building is completed. A small hospital will be built in the next two years. The few patients admitted to this hospital will receive the best of care and benefit of the most recent advances in medical science, but they will be used as subjects in the study of the causes of disease for which the institute has been endowed. While waiting for the new building the Rockefeller Institute has temporary quarters at Fiftieth Street and Lexington Avenue, where experiments are being carried on under the direction of Dr. Flexner.

National Mosquito Extermination Society.—The second annual convention of this Society will be held in Manhattan and Brooklyn on Thursday and

Friday, December 15 and 16, 1904. The public is invited to attend. The program is as follows:

First Session, December 15, 2:30 P.M. To be held at New York Aquarium, by courtesy of the Director, with the approval of the New York Zoological Society. (The Director will provide exhibits of living specimens showing the hatching of mosquitoes, and the various small fishes important as the destroyers of mosquito larvæ. He is now making experiments with a view to showing the comparative value of certain species of fishes in this connection. The Aquarium is easily reached by all surface and elevated lines to Battery Place.) Greetings from Major Ronald Ross, M.D., of Liverpool, England, recipient of Nobel Prize for discoveries of relation between certain mosquitoes and malaria. "Criminal Indictment of the Mosquito," submitted by Frank Moss, Esq., Counsel for Society for the Prevention of Crime. Submission by the audience of proposed Essential Questions to be asked later of the Advisory Board of Entomologists; their answers to be unified into a "Creed on Mosquitoes."

Second Session, December 15, 8 P.M.—Dr. L. O. Howard, Chairman; joint Session with Brooklyn Institute of Arts and Sciences, to be held in the Art Rooms, 174 Montague Street, Brooklyn. Paper by Col. Wm. C. Gorgas, M.D., Asst.-Surg.-Genl., U. S. A., in charge of "The Sanitation of the Panama Canal Zone," on this work. Address by Dr. E. Porter Felt, N. Y., State Entomologist, "Diversities Among New York Mosquitoes," illustrated by a large number of original lantern slides, representing various species in all stages and their differences.

Third Session, December 16, 2:30 P.M.—In conjunction with the Brooklyn Institute, in Hall, first floor, 502 Fulton Street, Brooklyn. Remarks of Chairman, Dr. John B. Smith, New Jersey. Representation of the Public Health and Marine Hospital Service. Dr. Walter Wyman, Surgeon-General, Dr. M. J. Roseneau, Director Hygienic Laboratory, Washington, subject: "Methods of Examination and Dissection of Mosquitoes for Parasites," (illustrated with many striking lantern views). Address by Dr. Thomas Darlington, Health Commissioner: "What New York City is Doing and Might Do toward Mosquito Extermination."

Third Session, December 16, 8 P.M.—By courtesy in the Hall of the American Institute, Berkeley Lyceum, 19 and 21 West Forty-fourth Street, Manhattan. Remarks by the President. Address by Dr. Quitman Kohnke, President Board of Health, New Orleans, La., on "The Mosquito Question." Illustrated by colored lantern-slides made from drawings, photographs, micro-photographs and diagrams, and by moving pictures, including mosquitoes in life and in asphyxiation by oil on water. Paper by Cornelius C. Vermeule, C.E., Consulting Engineer of the New Jersey State Geological Survey, etc., on "The Relation of Mosquito Extermination to Engineering and Public Improvements."

PHILADELPHIA.

Reception to Dr. Chapin.—The completion of fifty years' work among the insane was the occasion of a testimonial dinner to Dr. John B. Chapin, Superintendent of the Pennsylvania Hospital for the Insane, on December 1. The dinner was given in the Clover Club room of the Bellevue-Stratford and was attended by more than 75 physicians. Among the guests were the assistant physicians in

the hospital, the board of managers and the trustees. A large oil painting of himself was presented to Dr. Chapin as a testimonial of the regard felt for him by the profession. The presentation was made by Dr. Henry M. Hurd. Dr. E. N. Brush presided at the meeting and the following toasts were given: "Dr. Chapin and His Fellow Physicians," Dr. James C. Wilson; "The Law and the Doctor," Mr. James M. Beck; "The Physician and the Christian Gentleman," Rev. Stephen W. Dana, and "The Pennsylvania Hospital," Mr. James T. Shinn. The esteem in which Dr. Chapin is held by those outside of the medical profession is well shown by an editorial in the *Philadelphia Press*. In speaking of the revolution in the care of the insane, started by Dr. Chapin, it says the entire treatment and housing of the insane has been changed. "It has substituted separate small buildings for the large palatial structures once built. It has recognized the vital difference between the chronic and curable insane. It has relied upon a healthy environment and opportunities for work as equal in importance with medical treatment. Above all, it has looked upon the insane not as those set apart from their fellows but as patients, requiring indeed special precautions but demanding also the medical care, the individual treatment and the special individual environment, required by all the ill and ailing. This treatment substituted the hospital for the asylum and the cottage for the great dormitory. It brought greater comfort for the chronic and a greater percentage of cures for the curable. In this advance, which he began almost alone, nearly forty years ago, Dr. Chapin has steadily led, and the work which he has done in this city, at the head of one of its most important institutions, is one of the many claims of Philadelphia to be the center of the medical advance."

Nurses' Home Presented to Hospital.—Mr. and Mrs. Horace Brock, of Philadelphia, have presented to the Good Samaritan hospital, of Lebanon, a nurses' home costing \$7,500.

Special Lectures for the County Medical Society.—The second in the series of special lectures for the Philadelphia County Medical Society will be held December 21, at 8:30 P.M. Dr. William G. Spiller will speak on "The Diagnosis of Tumors Implicating The Intracranial Portion of the Visual System," and Dr. Allen J. Smith on "Terminal Atony of the Large Intestine."

The Use of Methylene Blue in Malarial Fevers.—At the County Medical Society, November 9, Dr. H. C. Wood, Jr., read a paper on this subject and reported the use of the above drug in seven cases of malaria. One was complicated by typhoid fever and the effect of the methylene blue cannot be judged. Of the remaining six, three were tertian and three quotidian in type. In all six there was cessation of symptoms and disappearance of fever as a result of treatment; in four there was at least one distinct rise of temperature after the drug was begun. One relapse occurred but readily yielded to treatment. Altogether the results were extremely gratifying. Wood believes, from these cases and the reports of many more in the literature, that in methylene blue we have an antiperiodic that rivals quinine in power and which in many cases is to be preferred to that alkaloid on account of its freedom from unpleasant by-symptoms. He employs the drug simply by giving two or three grains every three hours for a period of a week

to ten days and then making the withdrawal a gradual one. The failure to continue the treatment over a period of several weeks has been the cause of many of the relapses recorded. In answer to the point raised in the discussion that methylene blue was a sedative, Dr. Wood said he observed no signs whatsoever of this action of the drug in his cases.

University of Pennsylvania Notes.—The completion of registration figures for the University of Pennsylvania shows that the dental department is the most cosmopolitan of all the schools. A few of the countries represented are China, England, France, Germany, Russia, New Zealand, Switzerland, Africa, Japan, Holland, and the East and West Indies. Nearly 20 per cent. of the 358 students enrolled are subjects of Great Britain, thirty-three of them being from Australia. The school prints annually a catalogue in several foreign languages. The department has in its post-graduate school Dr. T. Okumura, professor of dental anatomy and histology in Tokio Dental College. He is the author of several Japanese works on dentistry, and has secured a two years' leave of absence, to be spent here in studying the modern methods of the science. The old medical laboratory has been renovated and will now be known as the "Robert Hare Laboratory of Chemistry," to be used for all medical students in their study of chemistry. The faculty of the Wharton School has arranged for a series of lectures on "The Selection of a Profession."

Pennsylvania State Medical Examination.—The official report of the Pennsylvania State Medical Board shows that the graduates of the University stood second in the number of successful candidates at the recent State Board examinations. The Women's Medical College of this city made the highest average.

CHICAGO.

Resignation of Dr. Woelfel.—Dr. Albert Woelfel has resigned his position in the Memorial Institute for Infectious Diseases, Chicago, to accept an appointment in the Department of Physiology, of University of Chicago.

Inspect New Hospitals.—The Cook County Hospital Advisory Committee recently inspected the new hospital for contagious diseases and the new hospital for children, which, it is said, will not be finished until January. Besides the members of the Hospital Committee, members of the other advisory committees of the County, County officials, charity workers and many others were invited and participated in the inspection.

Delay Merit Test for Physicians.—Although the civil service examination for candidates for the attending staff of the Cook County Hospital was announced for December 1, it has been in effect indefinitely postponed, pending an opinion of the County Attorney, to whom the question of the legality of the test has been referred by the Commission. The sentiment of those who favor the examination is that the matter has already been decided. When President Foreman of the County Board of Commissioners vetoed the action of the County Commissioners in rescinding their former action in favor of the examination he presented with the veto an opinion from the Assistant County Attorney, on which his veto was based.

A State Health Board Propaganda.—We have received from the State Board of Health of Illinois

a large well-printed poster issued by them and distributed throughout the State to be the means of educating the people as to the dangers of smallpox and that it is prevented by vaccination. It shows a number of graphic illustrations of patients suffering from smallpox and is accompanied by straightforward text as to the methods of vaccination. We should like to see more posters of this kind distributed throughout rural communities not only regarding smallpox but other communicable diseases as well. Here is a field now being let slip by many health departments, to be cultivated by manufacturers. The guinea-pigs and exhibition of sera of Mulford's, now shown in many of the large cities, are well devised and instructive. Propagandas of this kind are worth while and money spent in this way is as much more productive of good results than by the sending of health board statistics to readers who are not interested. We commend to the National Tuberculosis Association this movement as a useful piece of detail to be followed and improved upon.

GENERAL.

Harvard Medical School Buildings.—Work on the new Medical School buildings at Brookline has been progressing steadily this fall. Of the five structures, that for the Hygiene and Pharmacological Departments is nearest completion, the rooms being already plastered and ready for rough flooring. The Bacteriological and Pathological Building is ready for plastering and the roofs of the buildings for Physiology, Physics and Chemistry and for Anatomy and Histology, are all but completed. The Administration Building is the least advanced of the five, since it was desired primarily to put the laboratory buildings in condition to withstand the winter. Whether or not the buildings will be completed next summer, according to the terms of the contract, depends upon the severity of the coming winter.

Free Service of Dental School.—During the past six years the Dental School has maintained a free service for the sick poor of Boston, and has been prepared at all times to send a dentist to relieve such persons, either at their own homes or in the hospitals. This service has been recently extended in order to be of greater efficiency than heretofore. The school is now able to send one of its graduates, registered by the State board of registration, to relieve the pain of any sick poor person who is in need of immediate dental treatment. More extended treatment is postponed until the patient is able to visit the infirmary of the Dental School.

Crippled and Deformed Children in Massachusetts.—Governor Bates sent to the executive council to-day the appointment of these five trustees of the Massachusetts School and Home for Crippled and Deformed Children, the establishment of which institution was authorized by Chapter 446 of the Acts of 1904: Dr. Edward H. Bradford, of Boston (chairman); William Endicott, Jr., of Beverly, Hon. Alfred S. Pinkerton, of Worcester, Dr. William A. Morrison, of Boston, and Leonard W. Ross, of Canton. The act under which these trustees are appointed empowers them to purchase land and erect buildings for a home to hold not less than three hundred children, officers, employees and attendants, and to furnish and equip the same at a maximum cost of \$300,000, the plans to be subject to the approval of the governor and council. The trustees are to receive no compensation for their services, but shall be reimbursed for all expenses actually in-

curred by them in the performance of their official duties. The State Board of Charity is to have general supervision of the institution, and may, when so directed by the governor, assume and exercise the powers of the trustees in any matter relating to the management thereof.

Suffolk District Branch Massachusetts Medical Society.—The last meeting of this branch of the Massachusetts Medical Society, in conjunction with the Boston Medical Library, was held November 30, 1904, at the Library. The subject for discussion was "Ptosis of the Abdominal Organs, with Especial Reference to Ptosis of the Kidney." Dr. P. B. Harrington was in the chair.

Dr. M. P. Southwick first spoke on "The Importance of Keeping in Mind Ptosis of the Viscera, in Considering Treatment of the Kidney." He mentioned various conditions which had been given as causes of ptosis of the kidney; childbirth, tuberculosis, trauma, etc.; but said it was necessary to go back of this to a neuropathic condition, of low nerve power, in which the point of least resistance was attacked, whether this be a retroverted uterus, cardiac or stomach neuroses, flatfoot or other orthopedic conditions, or a movable kidney. In his private practice, out of sixty-eight cases with a movable kidney, half that number had retroverted uteri. Many of his cases showed no symptoms of the kidney conditions. Others only general neuros-thenic symptoms. He mentioned the rarity of real renal colic, and of cases of movable kidney, where the symptoms seemed to point definitely to that region.

Dr. W. H. Smith spoke on "Experience with Abdominal Supporters." He described two kinds of belts; one a plain abdominal band, which he had used but little, the other an accurately fitting, padded, corset-like belt. He then described in detail two cases which had been greatly benefited by such a belt as last described, and then another case not improved because the belt was put on with the patient standing, thus increasing rather than diminishing the pull on the kidney. In cases of general neuroses he did not advise the belt, nor in patients with gastropnoia. He emphasized the fact that belts would, in his opinion, do good only with the intelligent cooperation of the patient and in carefully selected cases.

Drs. Frank Balch and James Torbert next described the results of operation on movable kidneys at the Massachusetts General Hospital from 1890 to 1904. Out of 92 cases 41 replied to letters sent out, and out of these 28 were relieved and 13 not. The majority could give no definite cause for their condition; many attributed it to childbirth, a few to trauma; 86 were females, 6 males. In many cases additional operations had been done later on the gall-bladder or the appendix, rendering their reports unreliable. They spoke of the necessity of carefully choosing cases with real kidney symptoms. In such cases an operation might do good, in cases of general enteroptosis it would not.

Dr. R. G. Gordon gave a report of 17 cases from the Boston City Hospital during the last ten years, out of which he had had a personal interview with ten. They were all women, but of these two were operated on later for gall-stones; five were definitely cured and able to do their work without the slightest trouble, the rest were either unrelieved or only slightly improved.

In the discussion which followed these papers, Dr. H. D. Chadwick, of Waltham, spoke on the symptoms of movable kidney, which, in his opinion, required surgical relief. He had no success with belts, and did not believe a belt could pad the kidney. Out of twenty operations he considered only three to be failures.

Dr. A. T. Cabot said that comparatively little was as yet known as to the cause and symptoms of movable kidneys. The gravity of the symptoms did not in the slightest accord with the amount of movability of the kidneys, often quite the reverse. He thought it depended on the tolerance of the central nervous system to little irritations. He spoke of the anatomical conditions present, that the short right renal vein might be more easily shut off than the longer corresponding renal artery, thus causing a chronic congestion. He thought that an operation done early was far more apt to benefit the patient than a late one, as secondary changes due to chronic passive congestion were then not given a chance to take place. Still he considered better for the operation than any soluble suture material. He fastened the kidney just high enough so that it was not pressed upon by the liver.

Dr. Paul Thorndike thought that the large numbers of cases done and reported by men of little surgical experience in the past accounted for the large per cent. of failures. Out of 272 cases 91 reported in the out-patient department; 112 had movable kidneys without any symptoms. In many cases symptoms are coincident with and not the result of a movable kidney. He had no success with belts.

Dr. A. K. Stone spoke of the confusion of terms as regards this subject, and the necessity of distinguishing between the palpable kidney, which is almost a normal condition, and a real movable kidney. He mentioned the occurrence of acute cases due to extra strains on the nervous system as on the back where the kidney was already movable, but had up to then given no symptoms. With belts he had good success where an operation advised had been refused. He thought the belt must be very carefully fitted and treated as any complicated orthopedic apparatus.

Dr. W. B. Conant spoke of the position of the kidney in the body and how to preserve this natural condition on operation, also on the frequency of some trouble with the appendix in these cases. He used the lateral incision for this operation, thus exploring the entire abdomen.

Dr. R. C. Larrabee spoke of his out-patient experience with these cases and mentioned that in a large number of patients found to have movable kidney, the symptoms were as common in those who did not know they had a floating kidney as in those who did.

Drs. Stevens, Lund and Gay also spoke on this subject.

At a clinical meeting of the Medical Board of the Massachusetts General Hospital held December 2, 1904, Dr. F. B. Harrington spoke on angioneurotic edema, going carefully over the etiology and pathology of this condition, especially as regards the abdominal crises occurring during the attack. He mentioned its hereditary tendency; its relation to the other neuroses as urticaria, purpura, etc., and gave in detail the symptomatology of the abdominal crisis, and then described a case where a laparotomy had been done and a localized edematous swelling of the gut found near the cecum.

In the absence of Dr. R. H. Fitz, his house officer, Dr. Floyd, demonstrated a case of typhoid hematoma involving the rectus muscle occurring in a very severe case of enteric fever when restraint had been necessary by a sheet across the abdomen. The differential diagnosis between this and phlegmon was carefully considered.

Dr. George Waterman read extracts from a paper on cases illustrative of the differential diagnosis between epilepsy and hysteria.

Dr. C. S. Scudder demonstrated the Connell suture, as used by him in gastric and intestinal surgery.

Dr. W. H. Smith demonstrated for Dr. C. S. Shattuck relaxation of abdominal muscles of patient examined in a warm bath, and cited cases where this procedure had been of distinct advantage as an aid to diagnosis.

Dr. Fred Lord read a paper on Flies and Tuberculosis. He went over the literature of this subject, and then described his own experiments on flies fed on tuberculous and non-tuberculous sputum, with subsequent examination of the excreta as found in fly specks and of the intestinal contents themselves.

Dr. A. K. Stone read a paper on the "Value of X-ray in Phthisis," showing where he found it of use and how very misleading it was in certain instances.

American Academy of Ophthalmology and Otolaryngology.—This Society will hold its next meeting in Buffalo on August 23, 24 and 25, 1905. President, H. W. Loeb, St. Louis, Mo.; Secretary, George F. Suker, Akron, Ohio.

Pollution of Inland Waters.—A review of the laws forbidding the pollution of inland waters in the United States, writes *Science*, has been prepared by Mr. Edwin B. Goodell for the United States Geological Survey. It is published as No. 103 of the series of Water-Supply and Irrigation papers. Mr. Goodell's purpose has not been to prepare a complete work on water pollution for the use of members of the bench and bar, but rather to put into the hands of public officials, legislators, water companies, manufacturers, farmers and others interested in the subject, a guide for their action, and to furnish references to the sources from which a more exhaustive knowledge of the subject may be obtained if required. No attempt has been made to present a detailed statement of the entire law against water pollution as it exists independently of statutes, but the broad legal principles under which antipollution statutes become operative are explained and important court decisions are quoted to show authority for various deductions. These principles and decisions have been classified and are presented in three groups: (1) The rights of riparian owners to pure water as against one another; (2) the rights of the public (as distinguished from individual owners) to have inland waters kept free from pollution by riparian owners or others; (3) the conditions under which, and the extent to which, public municipalities may use inland waters in the disposal of sewage matter from public sewers. The statutes enacted in various States are classified according to their general scope and an opportunity is thus afforded to compare their effectiveness and desirability. In some states there is nothing more than a simple provision making it a crime to poison wells and springs, while in others elaborate provisions have been made to check and, so far as possible, absolutely prevent all pollution of all waters by the refuse products of animal life or the waste of human industry. In citing the statutes, Mr. Goodell has grouped the States together logically to show the stage of growth in sanitary education at which each has arrived. It is hoped that the publication and distribution of this paper will help to bring about a general apprehension of correct principles upon the important subject of water pollution.

OBITUARY.

Dr. JACOB P. BIXLER, a well-known physician, died at Carlisle, Pa., last week from paralysis. He was sixty-three years old. In 1866 he was graduated from Jefferson Medical College, Philadelphia. He was a mem-

ber of the Pennsylvania State Medical Society, and for many years he was president of the Carlisle school board.

Dr. WILLIAM E. CARROLL, of Newark, N. J., died December 2, at St. Michael's Hospital in that city, of pneumonia. He was a member of the staff of the hospital and for years had a large private practice. Dr. Carroll was born in Newark fifty-seven years ago.

Dr. WILLIAM F. CUSHMAN, for many years a practitioner of medicine in New York City, died last week at his country place, at Ridgefield, Conn., aged sixty-six years. He was a member of a well-known family, which for many generations lived in the Chelsea village district of Manhattan. Dr. Cushman was graduated from Columbia University and from the College of Physicians and Surgeons, and was for many years treasurer of the New York Academy of Medicine.

Dr. LEONARD F. PITKIN, surgeon to the Interborough Company, New York City, died last week at St. Luke's Hospital. Dr. Pitkin was taken ill last spring, and had to retire temporarily from the practice of his profession. He spent most of the summer in the country, and returned two months ago apparently much improved. Tuesday he became so ill that he was removed to St. Luke's Hospital. He was suffering from kidney disease. Dr. Pitkin was born in Hartford, Conn., in 1858. His family is one of the oldest and most prominent in New England. He came to New York twenty-five years ago, and built up a large general practice, being connected as medical adviser with several corporations. He was the physician who attended all subway cases since that work began.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

BIRTHDAY HONORS—THE QUEEN OF PORTUGAL—THE HEALTH OF THE KING AND THE PRINCE OF WALES—A NATIONAL COLLEGE OF PHYSICAL EDUCATION—THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION—THE UNIVERSITY OF LONDON AND RACE DETERIORATION—DEATHS IN THE PROFESSION.

LONDON, November 19.

The list of birthday honors issued on November 9 contains the names of only three or four members of the medical profession, not one of which probably has reached your side of the Atlantic. The best known of them is Mr. Shirley Murphy, Medical Officer of Health for the County of London, a meritorious official who has somehow failed to do all that was expected of him when the new administration of London, of which he is a part, came into being. He is a sound hygienist, but somehow gives the impression of irresolution in action and general indefiniteness of opinion. Hence his services, valuable as they are, have always been imperfectly appreciated by the Council which he serves. His salary (\$6,250 a year) is little more than half that of the Chief Clerk, the architect, the engineer and the valuer. The title has doubtless been got for him by some friend at Court by way of compensation for the inadequacy of his emolument. The only other new knight of any note in the medical world is Dr. William Japp Sinclair, Professor of Obstetrics and Gynecology in the University of Manchester. His title is probably a recognition, not so much of his scientific merits, which are not such as to make it inevitable that the King should delight to honor him, as of the part which he has taken in

promoting the higher education and registration of midwives.

The Queen of Portugal is here and her presence has naturally brought to life again the old fable that she is a doctor of medicine. This was officially denied some fifteen years ago in the *British Medical Journal* by the Portuguese Minister to the Court of St. James, who stated that although Her Majesty had always taken a great interest in medical matters she had never gone through a formal course of study. The legend is, however, too useful for journalists willingly to let it die, and it will doubtless be kept for use whenever circumstances make its revival appropriate.

So many official and "official" statements have lately been made as to the King's health that persons of suspicious temper might almost be tempted to think that those about His Majesty protest too much. We are assured in inspired articles that he is in the most vigorous health, and that he owes this to his scrupulous care in the matter of drink and diet. It is likely enough that since his appendicitis scared him he has been more moderate, but the officers of his Life Guards have not forgotten the Gargantuan trencher feats which their royal guest performed for their edification whenever he condescended to dine with them. These occasions were known among them by the significant name of "gobble nights." It is recorded that Louis XIV. once complained that he had almost had to wait (*J'ai failli attendre!*). It was distinctly understood that Edward VII. must not be kept waiting at table. His plate, therefore, was never allowed to stand empty before him, even for a moment, and his glass had to be constantly refilled. Mere men of mold could not keep pace with him. He once assured a distinguished physician, who was called in rather behind the backs of the regular attendants, that he did not drink much—not, at any rate, like his brother, the Duke of Saxe-Coburg. That may well have been, for the Duke, when at sea had sometimes to be kept out of the way of visitors. Our temperate sovereign, however, has been known to drink seven different kinds of wine at one repast, to say nothing of liqueurs, chasse-cafes and whisky afterward. If it be true, therefore, as now stated that "of wines he partakes most sparingly," one can only infer that he has made the discovery that there are limits even to the tolerance of a royal stomach.

Rumors have found their way into certain newspapers that the Prince of Wales is suffering from consumption, and that this fact supplies the explanation of his sea voyages. The statement has, of course, been met with the usual official contradiction. People remember, however, that in 1902 a statement made in *Reynolds' Newspaper* to the effect that the King was seriously ill, and contradicted in the same way, was verified almost immediately by the postponement of the coronation ceremony and the operation for appendicitis. It may or may not be significant that the statements about the Prince of Wales have been published in the same paper. The members of our royal family are nearly all unwholesome looking. Bismarck opposed the marriage of the late Empress Frederick with the Crown Prince of Prussia on the ground that she came of a stock which he coarsely but not untruly characterized as "those scrofulous Guelphs." To those familiar with the appearance of the Prince of Wales there is nothing improbable in the suggestion that he is tuberculous.

A conference was held in London on November 16 to consider a proposal to introduce into England the methods of physical training taught at the Royal Central Institute of Sweden. There students go through a course of instruction extending over three years in the theory and practice of massage. The promoters of the scheme hold that massage has been misused and misunderstood in this country, and that it is necessary to place it on the same footing as, for instance, pharmacy. At the conference Miss Theodora Johnson, principal of a Swedish Institute at Bristol, advocated the adoption of a scheme of national physical training similar to that which exists in Sweden. In order that the poor might learn the elementary rules relating to the care of the body she urged the appointment of a large number of itinerant lecturers who should go about preaching the gospel of health. Lord Londonderry, President of the Board of Education, who was present, said the report of the Committee on Physical Degeneration showed how necessary it was that physical education should be brought within the reach of every child in the country. He promised that the report should receive the most careful consideration from the department of which he is the head. While declining to give any pledge in the name of the Government, he said the proposal to establish a great central organization for the promotion of physical education must commend itself to all. He added, however, that the details of the scheme were so varied that it was impossible for him to express approval without fuller examination. The scheme received the support of Sir William Broadbent, Sir Lauder Brunton and Sir William Church, President of the Royal College of Physicians of London. The last-named moved a resolution that steps should be taken to establish in the United Kingdom a national system of physical education, and that the conference should form itself into an association for the purpose of pressing proposals to that effect on the Government. The motion was seconded by Sir Lauder Brunton and carried "unanimously." So say the newspapers. The fact is, however, that only four persons out of a meeting of fifty, or thereabouts, were allowed to vote. Their unanimity, therefore, is not so wonderful as it might seem. The Bishop of Bristol, who presided at the conference, stated at the outset that only persons who had been invited would be allowed to vote. In plain English, the meeting was packed. Why this curious precaution was adopted I cannot say, but it looks as if the promoters were afraid of opposition.

As Sir Lauder Brunton is the Secretary of the National League for Physical Education and Improvement, it is not improbable that both the College and the League are in reality parts of one movement. According to him the first aim of the League is to coordinate all existing societies of kindred aim, including temperance associations, societies for the teaching of cooking, housekeeping and the feeding of children, athletic clubs, drill associations, cadet corps, boys' brigades, rifle clubs, volunteer corps and girls' clubs. The League further proposes to promote the establishment of gymnasiums and swimming baths for young people among the working classes who cannot afford to join tennis, cricket and football clubs. Special attention will be given to the physical training of women and girls. Brunton points out that the working women in towns very often marry at too early an age with no knowledge

how children should be fed. Often they go out to work to supplement their husbands' scanty earnings, and when the baby comes they are too weak or too busy to give it proper attention. The mortality of children under one year is appalling. Even among children under five years it is far in excess of what it ought to be. Of those who survive many grow up weakly, with constitutions permanently damaged. They go to school insufficiently fed. Their opportunities for play and physical development are far too few. All this is to be reformed. In a word, the aim of the League is the physical regeneration of the nation. It is hoped that when thoroughly organized it will be able to work through branches. Each branch should furnish instruction to the people on the laws of health generally. Girls, says Lauder Brunton, should be taught methods of cooking and housekeeping, and mothers instructed in the care of children. Physical exercises and opportunity for open-air games should be given to both boys and girls. In towns the mayors and corporations should be induced to take part in the organization. There should also be a committee of ladies to supervise the instruction of mothers and the care of children. Part of the work of the League will be to initiate changes in existing laws with a view to the promotion of physical efficiency.

In connection with the subject of the deterioration of the race it may be mentioned that at a meeting held on October 26, the Senate of the University of London accepted an offer from Mr. Francis Galton, F.R.S., to endow a Fellowship in the University for the promotion of the study of "National Eugenics," which he defined as "the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally." The person appointed to the Fellowship will be required to devote the whole of his time to the study of the subject, and in particular to carry out investigations into the history of classes and families, and to deliver lectures and publish memoirs on the subject of his investigations. The endowment is sufficient to provide not only for the Fellowship, but also for the salary of an assistant, and for the general expenses of the contemplated work, which it is intended to locate in one of the colleges or other institutions connected with the University. Mr. Galton, who is nearly ninety years of age, is a cousin of Charles Darwin. He is a past president of the Anthropological Institute and is well known to those who pursue, what the poet calls, the proper study of mankind, as the author of works on hereditary genius, Englishmen of science, their nature and nurture, natural inheritance, identification of individuals by fingerprints, and numerous other writings.

Herbert William Allingham, one of the busiest surgeons of the day, has found the strenuous life too much for him, and took his quietus a week or two ago at Marseilles, not with a bare bodkin, but with a hypodermic needle. He was only forty-two years old, and was successful beyond the dreams of the average British surgeon, holding appointments at court and being recognized as one of the best operators of the day. His speciality was the rectum, a field of surgical enterprise which was cultivated to good purpose by his father, who is still alive in retirement. The elder Allingham was once moved by the ambition to fill a seat in the Council of the College of Surgeons, which is looked upon

here as the Sanhedrim of Surgical Israel. When the result of the poll was declared his coachman was heard to ask another Jehu waiting at the gate of the College where his master stood on the list. "At the bottom," was the reply. "Ah," said the coachman meditatively, "that's where he always is!" Young Allingham had a great charm of manner, and was accordingly very popular in society. He could talk about anything. But on one point, says an admiring scribe in one of our most icteric newspapers, he was adamant. "In ordinary society, though half a dozen persons present might be his patients, he was dumb about his work, and even his polished courtesy would give way before persistent questioning about professional matters." Surely there could be no more maladroit compliment to a surgeon than that he did not choose diseases of the rectum as a subject of conversation in mixed society. He might as well be praised for not having entertained the company by giving demonstrations on the half-dozen patients present. Allingham is succeeded in the post of surgeons to the royal household by Mr. Anthony Bowlby, of St. Bartholomew's Hospital, a surgeon who has proved his fitness for attending on royal personages by operating on the Princess Victoria of Schleswig-Holstein for appendicitis.

Another medical notable who has recently passed away is Dr. Charles Douglas Fergusson Phillips, author of a work on materia medica and therapeutics, which once had a considerable vogue. He was for some time lecturer on these subjects at Westminster Hospital, and examiner in the Universities of Aberdeen, Edinburgh and Glasgow. He was, I believe, originally a homeopath, but found professional salvation. Perhaps the greatest achievement of his life was the extraction of \$80,000 from a railway company some years ago as damages for an injury which caused only temporary disablement.

AUENBRUGGER OR AVENBRUGGER?

To the Editor of the MEDICAL NEWS:

DEAR SIR:—The name of Auenbrugger appears in literature spelled "Au," and sometimes "Av," these variations occurring in such authoritative writings as the following:

"Dictionnaire Historique de la Médecine Ancienne et moderne, 1828. Auenbrugger (Leopold) Né à Graetz dans la Styrie le 19 Novembre 1722.

Dictionnaire Encyclopédique des Sciences Médicales. "Auenbrugger (Leopold)—Dans le commencement de l'Année 1761 paraissait à Vienne en Autriche une brochure etc., etc. Dans sa préface, datée du 31 Décembre 1760 l'auteurs exprimait ainsi.

Encyclopedia Britannica 1875. "Avenbrugger or Auenbrugger, Leopold, a physician of Vienna. . . . He was born in Grätz in 1722 and died 1809."

In gathering material for the historic portion of an article on cardiac disease I fell into the error first made by Corvisart, who is probably responsible for this confusion, of spelling the name "Av." In conversation with Dr. Dock, of Ann Arbor, he called my attention to this error and I took the first opportunity of consulting an original copy of the "Inventum Novum," in the Surgeons-General Library at Washington, as I had not been able to procure one in the Library of the New York Academy of Medicine.

The following is an exact copy of the title page of an edition dated 1761, the year of the first publication:

LEOPOLDI AUENBRUGGER

MEDICINÆ DOCTORIS
IN CÆSAREO REGIO NOSOCOMIO NA-
TIONUM HISPANICO MEDICI ORDINARI

INVENTUM NOVUM

EX

PERCUSSIONE THORACIS HUMANI
UT SIGNO

ABSTRUSOS INTERNI

PECTORIS MORBOS

DETEGENDI

(Printers Mark)

LABORE ET FAVORE

VINDOBONÆ,

TYPIS JOANNIS THOMÆ TRATTNER, CÆS.
REG. MAJEST. AVLÆ TYPOGRAPHI.

MDCCLXI

In books printed as late as the seventeenth century two "V's" were used for "w" there being no such letter in the older fonts. The letters were sometimes crossed thus, W. "U" and "V" were also interchangeable, as appears in lexicons published as late as 1840. It is not surprising then that Corvisart, in translating Auenbrugger's "Inventum Novum," should have introduced the spelling "Av" as shown by the following copy from a first edition:

NOUVELLE MÉTHODE

POUR RECONNAITRE

LES MALADIES INTERNES

DE LA POITRINE

PAR LA PERCUSSION DE CETTE CAVITÉ
PAR AVENBRUGGER

Medecin ordinaire de la Nation Espagnole dans
l'Hopital impérial, a Vienne en Autriche
OUVRAGE TRADUIT DU LATIN ET COM-
MENTÉ PAR J. N. CORVISART

(Titles)

Insonvère cavæ.

Virg. Æneid

A PARIS

DE L'IMPRIMERIE DE MIGNERET

1808

The spelling Auenbrugger should be retained as this identifies the great discoverer with Germany (born at Grätz) which would not be the case with the spelling "Av."

Very truly,

C. N. B. CAMAC.

108 East Sixty-fifth Street.
New York, November 21, 1904.

Treatment of Tuberculous Laryngitis.—To relieve the dysphagia in this condition the following tablet may be advised:

℞ Anæsthesin.	3i (4.0)
Pulv. althææ.	3i (4.0)
Pulv. acaciæ.	
Pulv. glycyrrhizæ.	aa q.s.

Fiat tabulæ No. L.

Hold in mouth until dissolved.

SOCIETY PROCEEDINGS.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.¹

Eighth Regular Meeting, held October 19, 1904.

The President, S. J. Meltzer, M.D., in the Chair.

Members Present.—Burton-Opitz, Calkins, Davenport,² Ewing, Flexner, Gies, Hiss, Lee, Levene, Levin, Lusk, Mandel, Meltzer, Park, Richards, Salant, Wadsworth, Wallace, Yaku.

Members Elected.—J. G. Adami, R. A. Hatcher, Yandell Henderson, G. N. Stewart, C. G. L. Wolf.

ABSTRACTS OF REPORTS OF ORIGINAL INVESTIGATIONS.³

The Accommodation of the Eye, with Demonstrations.—By professor Theodor Beer, of the University of Vienna. Two principles are realized in the accommodation of an eye, that is constructed as a "camera obscura": (1) Change of curvature of refracting surfaces, principally the lens; (2) Change of distance between refracting mediums and image screen, principally distance between lens and retina.

1. There is only *increase* of curvature, principally of the anterior surface of the lens, during active accommodation. We observe it in mammals, birds and reptiles (lizards, crocodiles, turtles, very few snakes). Experiments were made before the society to show the increase of curvature of the lens in the eye of the water turtle—proofs of Helmholtz's theory of accommodation.

2. Accommodation by change of the distance between lens and retina is possible in two directions: (a) In cephalopods and fishes, which are normally short-sighted—accommodation for objects at a distance is effected by a movement of the lens toward the retina. In the eye of the fish there is a muscle, *Musculus retractor lentis* Beer, which draws the lens toward the retina. (b) In *Amphibia* and most of the snakes, the lens is moved toward the cornea, away from the retina, by changes of the intra-ocular pressure.

Preliminary Communication on the Composition of the Liver After Subcutaneous Injections of Liver Extracts.—By P. A. Levene and L. B. Stookey. About two years ago the authors observed that it was possible to increase the resistance of rabbit blood against trypsin by treating the animal to subcutaneous injections of pancreatic extract. It seemed probable that the resistance of organs against other proteolytic enzymes than trypsin could be increased in an analogous manner. Rabbits were treated with saline liver extracts. The autolytic powers of the livers of such animals were compared with the autolytic powers of the livers of normal animals. It was found that the autolytic power of the organs was not diminished. It was also noted that the organs of the treated animals contained smaller proportions of nitrogen than the livers of the control animals and further, that the proportion of non-coagulable proteids, and that of non-basic nitrogen was higher than in controls. In order to accurately interpret the findings, the composition of the organs was compared. (See the appended table). It was noted that the amount of water and carbohydrates was not affected by the treatment, while the proportion of ethereal extract was higher in the organs of treated animals than in those of the control animals.

¹ Proceedings reported by the Secretary, William J. Gies, Ph.D., of New York.

² Non-resident.

³ The authors of the reports have furnished the abstracts. The secretary has made only a few abbreviations and minor alterations in them.

The Transformation of Negatively Heliotropic Animals (*Gammarus pulex*) into Positively Heliotropic Animals by Chemical Means.—By Jacques Loeb (presented by Simon Flexner). After it had been proved that the heliotropism of animals and plants is identical, it seemed desirable to find means by which positively heliotropic animals could be transformed into negatively heliotropic ones and *vice versa*. Groom and Loeb found that such transformation was possible in the nauplii of *Balanus perforatus* at Naples by the influence of light, inasmuch as these animals were positively heliotropic in very weak light and negatively heliotropic in strong light.¹ Later Loeb found that the marine copepods and young larvæ of *Polygordius* became positively heliotropic by the lowering of the temperature as well as by an increase in the concentration of the sea water, while they became negatively heliotropic under the opposite influences.² Moreover, Loeb observed that negatively heliotropic copepods can be made positively heliotropic by mechanical agitation,³ and Miss Towle showed that the sign of heliotropism in *Cypridopsis* can be reversed through contact with solid bodies.⁴ Holmes made the discovery that the positively heliotropic terrestrial amphypod, e.g., *Orchestia agilis* become negatively heliotropic when thrown into water.⁴

of the fatty series; (2) many acids, except very weak ones, like boric acid; (3) certain salts, like ammonium salts.

Alkalies like NaOH, or Ba (OH)₂, and the neutral salts like NaCl or CaCl₂ bring about a scattering of the negatively heliotropic animals but do not make these animals instantly and without exception positively heliotropic, as do the anesthetics or the acids.

A few quantitative data may be mentioned here by way of illustration:

Ethyl acetate and similar esters instantly make all the *Gammarus* positively heliotropic in a concentration of about m/100. Ether requires a higher concentration, namely m/5. Ethyl alcohol brings about an equally rapid transformation of the negative heliotropic animals into positively heliotropic in a much higher concentration, namely 1/100 solution. Paraldehyd requires a concentration of about m/100. As far as the acids are concerned hydrochloric, oxalic and acetic acids make the animals instantly and without exception positively heliotropic in the concentration of about m/100. In boric acid the animals remain negative even at as high a concentration as m/10. NH₄Cl instantly makes the negatively heliotropic *Gammarus* positively heliotropic in a concentration of m/10. NH₄OH acts similarly in the

No. of Experiment.	Weight of rabbit gms.	Weight of liver gms.	Gram Ethereal extract per gms. of liver.	Gram Carbohydrate as sugar per grm. of liver.	Per cent. of water in liver.	As $\frac{n}{10}$ — NH_4 OH per gm. of liver c.c.	Liver before digestion.		Period of digestion Hours.	Liver after digestion.		Rabbit.		
							Per cent. total N as c.c. $\frac{n}{10}$ — NH_4 OH	Zinc sulfate filtrate.		Per cent. total N as c.c. $\frac{n}{10}$ — NH_4 OH	Phospho- tungstic filtrate.		Zinc sulfate filtrate.	Phospho- tungstic filtrate.
I	...	..	....	....	...	20.0	13.5	9.9	24	18.0	12.3	normal.
II	...	..	....	....	...	18.0	10.0	8.5	24	24.0	19.5	"
III	...	..	....	....	...	19.0	10.1	8.7	24	18.9	13.2	"
IV	...	..	....	....	...	19.0	12.6	10.4	24	18.9	15.4	"
V	2050	75	0.026	0.078	72.0	...	...	...	..	...	...	"
VI	2250	87	0.023	0.107	69.2	19.8	...	...	..	...	...	"
VII	...	..	....	....	...	16.0	19.5	16.8	24	28.5	22.5	treated.
VIII	1710	66	0.048	0.055	71.5	16.8	21.5	19.7	24	30.7	26.7	"		
IX	2800	76	0.056	0.071	70.8	17.3	20.7	15.6	24	29.6	23.2	"		

The author had tried in vain to change the sense of heliotropism in animals by chemical means, and this gap was felt the more keenly, inasmuch as he was led to believe that chemical changes might ultimately determine changes in the sense of heliotropism. Recently, however, the author succeeded in finding an instance where specific chemical substances are capable of transforming the sense of heliotropism in animals. The experiments were made with a fresh water gammarus (*Gammarus pulex*) which can be obtained at any time in large quantities at Berkeley. If one puts a large number of these animals suddenly into distilled water or into common tap water, they all become at first very negatively heliotropic. It is possible that this is caused by the mechanical agitation, connected with the transferring of the animals from one vessel to another, but this has not yet been ascertained with certainty. Half an hour or an hour later, the negative gathering of the animals becomes less dense, and the animals are scattered in the vessel.

These negatively heliotropic animals can be transformed instantly into positively heliotropic animals by the following substances: (1) Many of the anesthetics

same concentration. As far as neutral salts are concerned they usually do not make the negatively heliotropic *Gammarus* positively heliotropic until the concentration is over m/4 or m/2, and even then, as a rule, no instantaneous and complete gathering of the animals at the positive side of the vessel can be produced, but only a slow and partial gathering.

As the concentration at which the transformation of negatively heliotropic *Gammarus* into a positively heliotropic animal is produced differs for different substances, and inasmuch as this transformation is brought about most promptly by such substances as diffuse most rapidly into the tissues, we must conclude that we are not dealing here with an osmotic but with a chemical effect.

Trypanosomes and Bird Malaria.—By F. G. Novy and W. J. MacNeal. (Presented by Gary N. Calkins). The studies made before upon the malarial parasites of birds have shown the existence of four species or types. These are: *Proteosoma*, *Halteridium*, *Hamamaba majoris*, Lav., *Hamamaba Ziemanni*, Lav. In the course of an extended study of the parasites of birds, the authors have met with several new species and, since the number is likely to be still further increased, it seems desirable to attempt a classification. This the authors have tried to do basing it largely upon the type of mul-

¹ Groom and Loeb. Biologisches Centralblatt, 1890, p. 160.

² Loeb. Pflüger's Archiv, Bd. 54, p. 87, 1893.

³ Towle. Am. Journal of Physiology, vol. iii, p. 345, 1900.

⁴ Holmes. Am. Journal of Physiology, vol. 5, p. 211, 1901.

tiplication and the habitat of the parasite. Two genera will be given; one, *Plasmodium*, characterized by formation of segmenting forms in the peripheral blood and invasion of the fully developed red blood cells. The injection of these parasites results in an infection. For the other germs we use the priority name of Kruse, *Hamoproteus*. This is characterized by an entire absence of segmentation forms in the peripheral blood, and, with the exception of two species which form a transition as it were between the two genera, invasion of young erythroblasts is the rule. The injection of the blood having these parasites does not lead to infection.

With this division the species are arranged as follows: A. *Plasmodium*, including parasites of man, some of birds and very probably some of cold-blooded animals. (1) *Plasmodium relictum*, syn. *Hamamaba relicta*, *Proteosoma*. (2) *Plasmodium Vaughani*, n. sp. B. *Hamoproteus* including chiefly parasites of birds and probably offering transitional forms to the *Hamogregarines* of cold-blooded animals. (1) *Hamoproteus Danilewskyi*, syn. *Halteridium*. (2) *Hamoproteus MacCallumi*, n. sp. (3) *Hamoproteus Sacharovi*, n. sp. (4) *Hamoproteus majoris*, Lav. (5) *Hamoproteus Ziemanni*, Lav. (6) *Hamoproteus Rouxii*, n. sp.

Plasmodium Vaughani, n. sp., is common in robins and resembles *Proteosoma* and may be easily mistaken for the latter. The hyaline body is smaller than that of *Proteosoma*, does not displace the nucleus, contains one large pigment granule and is readily recognizable by the presence of a large, bright, refractile, colorless globule. It segments and usually forms four cells. Canaries may be infected; apparently non-fatal.

Hamoproteus MacCallumi, n. sp., found in mourning dove. Like *Halteridium*, which it resembles, it infects erythrocytes. Grows on one side and may completely surround the nucleus. The fully developed sexual forms fill and somewhat distend the blood cells. Microgamete formation observed. The infection cannot be transferred by blood injection.

Hamoproteus Sacharovi, n. sp. This species, probably first observed by Sacharoff, who regarded it as a "leucocytozoon," is related to that of Danilewsky. Found in young mourning doves and elsewhere. Invasion begins with an infection of very young erythroblasts. As the parasite grows it pushes the nucleus to the periphery, where it is seen in the adult form on the outer edge as a cap, which is but a trifle larger than the nucleus of a red blood cell. The parasite is spherical, male and female forms common, latter predominate, blepharoplast distinct, adjoining or over the nucleus. Microgametes formation common. Infection not transferable by the blood.

Hamoproteus majoris, Lav. This was found once by Laveran in a titmouse. This species is extremely common in robins and other birds. As with preceding invasion at early stage shows infection of very young erythroblasts, the small parasite lying next to the large round nucleus. As the parasite grows it pushes into the nucleus which becomes crescentic and may almost wholly surround the parasite. The adult sexual forms are large, about 10 to 12 microns in diameter, and are readily recognizable by the peripheral ring of the nucleus of the host cell. This cap may extend, and usually does, around two-thirds of the cell and even more. The blepharoplast is easily seen in female cells; microgamete formation common. No infection of other birds by injection of blood swarming with these forms.

Hamotropes Ziemanni, Lav., has been studied by Danilewsky, Ziemann, Laveran, Schaudinn and others. Forms long spindle-shaped bodies which are 30 to 50

microns in length. We have found this species or one closely related to it in the blood of a hawk. Sexual forms easily recognized.

Hamoproteus Rouxii, n. sp., is very common in sparrows, and represents the very earliest possible infection of young erythroblasts, so much so that it is not feasible to exclude the possibility of their being leucocytes. As the parasite grows it pushes into the nucleus which assumes the form of a thick crescent. The parasite measures from 4 to 6 microns. Its plasma does not stain readily and sexual forms have not as yet been recognized. Apparently always associated with this cytozoon are minute crescentic free hemogregarines. These are but 4 microns long and are motile, crawling over the red blood cells in characteristic manner. Larger motile crescents, about 10 microns long, at times are present. Both large and small crescents are free and motile and, it is important to note, are present in the fresh blood at the moment when drawn. They cannot, therefore, be considered as oökinetes. They are hemogregarines and presumably constitute the extracellular stage of *H. Rouxii*.

It is to be noted that the last four mentioned forms all exert pressure in the nucleus of the erythroblasts, and, as a result, give rise to very peculiar types. They are all "leucocytozoa" of which, thus far, there has been but one type, that of *H. Ziemanni*. The view of Schaudinn that the latter is a trypanosome which ingests an entire erythroblast by attaching itself to such by one end becomes untenable, inasmuch as all stages of infection, from the earliest to the latest, can be readily observed in the case of *H. Sacharovi* and *H. majoris*. The authors regard the large spindle-shaped *H. Ziemanni* as an infection of an erythroblast and the elongated form as consequent upon an alteration of the wall of the host-cell leading to increased osmotic pressure which, acting on the poles, gives rise to the spindle-shaped forms.

In addition to the parasites mentioned, birds harbor very frequently *Filaria* and *Trypanosoma*. In the case of the *Filaria* while the peripheral blood may contain but a few, the heart blood may contain large numbers. Trypanosomatic infection of birds is far more common than has been supposed. The largest number of infected birds seen by any one observer was eight, which were found by Dutton and Told, in Senegambia. The reason why they have not been found more commonly is because they are present in very small numbers, usually not more than one or two flagellates in a drop of blood. By microscopical and cultural methods the authors have been able to detect trypanosomes in the blood of 33 birds. Of this number 18 were detected by direct blood examination (of the 18 birds, 10 were tested culturally and gave growths), and 15 by means of our cultivation method, that is to say, in 15 cases where the microscope failed to show trypanosomes, the culture method showed them to be present. This shows that, as in the case of the bacteria, the cultural method is a more delicate means of detection of small numbers of parasites than is the microscope. The occurrence of these trypanosomes, with reference to the cytozoa mentioned, is of special interest. Thus, 13 out of the 33 trypanosomes were unaccompanied by any intracellular parasites, while 20 were associated with one or more kinds of cytozoa. It was not an uncommon thing to find multiple infection, that is, the same blood harboring at one time, in addition to trypanosomes, two or three different species of intracellular parasites.

Again, in addition to the fact that trypanosomes may be present without any other parasite, the interesting fact that when thus associated there is no constant rela-

tion between the two. In other words, the same trypanosome may be found at one time with a *Proteosoma*, at another time with a *Halteridium*, or with *H. Sacharovi* or with *H. majoris*, etc.

In 25 out of the 33 cases mentioned cultures were obtained. Nearly all of these have been carried through a series of subcultures or new generations. Here another important fact was brought out. The cultural method is not only the best means of detecting trypanosomes in the blood, but it is the best means of differentiating them into species. A study of 25 cultures attained shows that they represent three, if not four and possibly more distinct species. The cultural characteristics are extremely well marked and offer an admirable means of differentiation. [The detailed account of these forms must be left to the full paper by the authors on this subject.]

One species, however, more common than any of the others must be considered at this point. Its cultures present an extremely interesting appearance and are unusually luxuriant. They show two types of cells. One of these is round or in short spindles which always occur in rosettes with the flagella directed centrally as in the case of *Trypanosoma Lewisi*. The other type is long and very slender, almost a mere line, and is extremely motile, traveling forward and backward with great rapidity. Very often two cells unite by their posterior ends; at times agglutinations are found and in these the whips are found situated on the outside of the mass. This long, slender, type corresponds exactly to the "*Spirochete*," described by Schaudinn, while the other type agrees with his "*Trypanosoma*."

It is noteworthy that inoculation of the trypanosome cultures, even in large amounts into birds, failed to produce any cytozoa. In one case a canary infected with such a culture showed trypanosomes in its blood for three months without any sign of an intracellular parasite. These facts are of importance because of their bearing on the recent views of Schaudinn, regarding the relation of trypanosomes to the intracellular parasites. As is well known this distinguished protozoologist believes that in the case of *Halteridium* the sexual forms unite in the stomach of the mosquito to form oökinetes which then develop into indifferent male and female trypanosomes. This type agglutinates with the flagella directed toward the center. In the case of the *H. Ziemanni* he holds that a similar change occurs in the mosquito, giving rise to long slender spirochetes, which agglutinate with the flagella directed outward. The injection of suspensions of such infected mosquitoes produced the characteristic infection with the hemocytozoa.

It will be seen that the results obtained by the authors do not bear out Schaudinn's conclusion. The authors have shown that birds may harbor trypanosomes even for months without showing any intracellular parasites. On the other hand, birds rich in such cytozoa may contain no trypanosomes. Thus, cultures attempted from 26 of such heavily infected birds failed to show any growth. Again the presence of trypanosomes is not associated with any one form of intracellular parasite. Furthermore, the cultural method shows the existence of several distinct species of trypanosomes, and among these is one which presents at the same time both types described by Schaudinn as stages on the one hand for *Halteridium*, and on the other hand for the *Leucocytozoon* of Danilewsky.

The authors, therefore, conclude that trypanosomes in birds may be met with as several distinct species wholly unrelated to the intracellular parasites. The greatly diverging conclusions reached by Schaudinn and

the authors must be ascribed to the fact that Schaudinn worked with "*mixed cultures*," as developed in the body of the mosquito, whereas the authors have employed strictly pure cultures of these flagellates.

[The authors hope to publish the full detail of this investigation in the January number of the *Journal of Infectious Diseases*.]

The Gradual Decrease in Bacteria of the Production of Agglutinable Substance.—By William H. Park. At the last meeting of the Society of American Pathologists and Bacteriologists, an informal statement of this fact was made by Dr. Welch, for Drs. Marshall and Knox. The experiments of Dr. Collins and the author are recorded because they were undertaken in a slightly different way and also because a certain number of confirmatory observations are of value. The maltose fermenting paratyphoid bacillus of Flexner was grown for twenty-four hours on each of eleven consecutive days in fresh bouillon solutions of the serum from a horse immunized through oft-repeated injections of the bacillus. The serum strength in the solutions used was one and one-half, four and fifteen per cent. The serum agglutinated the culture before its growth in the solutions in dilutions up to 1:800, and was strongly bactericidal in animals. After eleven transfers the culture grown in the fifteen per cent. solution ceased to be distinctly agglutinated by the serum in any dilution, and ceased to absorb from the serum any appreciable amount of the agglutinins acting upon the original culture. The cultures grown in the one and one-half and four per cent. solutions were changed to a less degree and agglutinated in dilutions up to 1:100 and 1:60 respectively, and continued to absorb agglutinins. The recovery of the capacity to be agglutinated was very slow in the culture grown in the strongest serum solution, when it was from time to time transplanted on fresh nutrient agar. The other cultures recovered this characteristic more rapidly.

The first culture, after growth for sixteen weeks, during which it was transplanted 43 times, agglutinated in dilutions up to 1:200 and, after twenty weeks, in dilutions up to 1:400. The culture grown in four per cent. solution of serum agglutinated after sixteen weeks in dilutions up to 1:500, and the one and one-half per cent. agglutinated in dilutions up to 1:800. This diminution, and final, almost complete, lack of development of agglutinable substance in bacteria grown in a serum rich in agglutinin and immune bodies is interesting, both as showing a rapid variation in bacteria of essential characteristics, and as possibly indicating one means of adapting themselves to resist destruction in the living body, since the bacteria which ceased to produce agglutinable substance and probably, also less substance with affinity for other antibodies, might be considered less vulnerable to these substances.

It is not certain that the agglutinin in the serum causes the change in the bacteria, for solutions may agglutinate and still not produce this effect. The fact has been noted that the horse serum of animals not immunized has much the same effect on the cultures as the immune serum. Although this suggests that the change is not due to antibodies, it does not prove this, since the serum of a horse before injections is rich in antibodies, for the typhoid and colon groups, due possibly to the passage of bacteria from the intestines into the circulation.

The author's explanation of the process is that there are substances in the serum which attack certain parts of the bacteria, such as the agglutinable substance. In the increase of bacteria in the serum those which produce the least of these substances are least inhibited and

therefore develop most rapidly. When cultures are made from serum solution to serum solution daily, a gradual differentiation takes place until finally bacilli producing almost no agglutinable substance develop.

Some Mendelian Results in Animal Breeding.—By C. B. Davenport. The essence of Mendelism in inheritance is its alternative character. In this it is opposed to blending inheritance (as in human skin color) which had been regarded as the typical sort of inheritance. At the station for experimental evolution of the Carnegie Institution, certain new cases of non-blending inheritance have already been found. Among sheep it appears from Dr. Alexander Graham Bell's records, that the offspring of two black sheep are (probably always) black, although one or more of the grandparents were white. It looks as if black color (like albinism) might be recessive. Among canary birds it is found that of the offspring of crester and of plain-headed birds, some are crester and some are not. Poultry have been studied because of the numerous characters they exhibit. When a Japanese long-tailed, clean-legged cock was crossed on a white bantam hen, the two surviving offsprings were highly colored, like the father, and had abundant feathers on the legs like the mother. The crested characteristic of poultry is peculiar, being sometimes dominant and sometimes (apparently) blending with the combed condition when the cross is made.

On the Decomposition Products of Epinephrin.—By John J. Abel and R. de M. Tavean. (Presented by William J. Gies.) The empirical formula, $C_{10}H_{15}NO_5 \cdot \frac{1}{2}H_2O$, adopted by Abel for that member of the epinephrin series, which he has called epinephrin hydrate (the adrenalin of Takamine) is at present, the subject of an acute controversy. The authors are now engaged in a repetition of the analytical work on which Abel based the above formula for epinephrin hydrate. In view of the suggestion of Abderhalden and Bergell that this substance should be prepared in a way that avoids oxidation by the air, the authors have undertaken the laborious task of preparing and purifying it in an atmosphere of hydrogen.

The authors wish to remark here that the $\frac{1}{2}H_2O$ of their empirical formula has always been regarded by them to be water of constitution, and not water of crystallization, as their opponents have taken for granted. The assumption that this $\frac{1}{2}H_2O$, so easily removable by high heat and by various acids, is water of constitution necessitates doubling the present empirical formula, a procedure which is at variance with the molecular weight determinations of v. Fürth and Jowett. These determinations are, however, open to serious objections as will be shown at length elsewhere. Work on the decomposition products of both alkaloidal epinephrin and epinephrin hydrate has been continued. The basic substance, $C_8H_9N_3O$, which is obtainable equally from both forms of epinephrin, has been decomposed by treatment with caustic potash into ammonia, (NH_3) , methylamine (CH_3NH_2) , and methylhydrazine $(HC_2NH.NH_2)$ of these decomposition products methylamine is also obtained from both modifications of epinephrin. Methylhydrazine has thus far not been obtained either from epinephrin or its hydrate. This degradation product is of great importance in throwing light on the chemical constitution of the new base, $C_8H_9N_3O$, as its appearance, under the circumstances described, proves that the two nitrogen atoms of this base are directly combined one with the other, and suggests among other things for this base a ring structure such

as is found in bodies of the pyrazolon $\begin{pmatrix} N & - & NH \\ | & & | \\ CH=CH_2 & - & CO \end{pmatrix}$

series. It may here be noted that pyrazolin carboxylic acids can easily be made to yield hydrazine.

A full discussion of the bearing of the above results on the constitution of epinephrin must be deferred until it has been determined whether the oxidation product, $C_8H_9N_3O$, is of a primary or of a secondary character. In any case an adequate constitutional formula for epinephrin must be able to account for all the decomposition products that have been named. In conclusion it may be mentioned that the authors have repeatedly obtained, in their recent work, small quantities of

skatol $(C_6H_5 \cdot \begin{pmatrix} C(CH_3) \\ | \\ NH \end{pmatrix} \cdot CH)$ on fusing epinephrin hydrate with caustic alkalis—a product which has been erroneously supposed to be obtainable only from the monobenzoyl series of epinephrin compounds.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held November 7, 1904.

Cirrhosis of the Liver.—The condition was briefly discussed by Dr. Osler preliminary to a report of a case representing one of the rare forms. The subject was, he said, much confused in the literature, particularly in France, where a multiplicity of forms had been described, and a most complex classification constructed. Between these text-book forms and the actual clinical findings there was not always agreement, and the result has been a good deal of confusion, particularly on the part of students. Cirrhosis was best considered as divided into three types: The portal type, in which the involvement is chiefly in the peri- and sublobular veins—the biliary type, and the capsular type—the capsule being involved alone or as part of a general peritonitis.

Biliary Cirrhosis of Family Type.—There was not, Dr. Osler said, general agreement as to the existence of a definite biliary type of cirrhosis, the English particularly denying it. He expressed his own belief, however, in such a clinical entity exhibiting the following characteristic features: A protracted course (after five to twelve years), a persistent, chronic, intense jaundice; pains, often marked, in the hepatic region; tendency to occur in the young (sometimes in children) as distinct from alcoholic cirrhosis; absence of signs of portal obstructions (ascites, hemorrhoids, etc.); frequency of hemorrhages (mucous and cutaneous); a large, smooth liver found on examination. Other causes of this form of enlargement of the liver should, however, be always kept in mind, for hypertrophy of this type is seen in the alcoholic liver, in the fatty liver and in cases of regeneration after atrophic cirrhosis.

Report of a Case of Hanot's Cirrhosis.—The case reported was of a young man of twenty-three years, with good family and personal history, and without alcoholic or luetic taint. At five years of age he had had an attack of jaundice, from which he recovered. Five years before admission the persisting jaundice had first appeared, and it had been constantly present ever since. With it there had been itching and epistaxis, but no pains, anemia or fever. The liver was below the costal margin, the spleen was not felt, and there was no leucocytosis. Under the administration of calcium the blood coagulation-time was reduced to about two minutes, and an exploratory operation was done. No obstruction was found in the bile passages. The patient died in a few days of hemorrhages. It was found later that the condition was familiar, two of

the patient's brothers and one sister suffering from persistent jaundice. Dr. Osler, in connection with this case, reviewed the clinical features of two other patients treated some years ago in the Johns Hopkins Hospital for the same condition. These were two brothers, aged thirty-two and thirty-four years, with a healthy family and no alcoholic history. Both had been jaundiced several years, and suffered from recurring hepatic pains with hemorrhages from nose and gums. The liver was enlarged in both cases. One of the patients died with signs of a terminal infection, and staphylococci and streptococci were found in the blood.

Pathological Specimens of Biliary Cirrhosis.—Dr. MacCallum showed the specimens and described the pathological changes found at autopsy in the first case reported by Dr. Osler. The gall-ducts were apparently normal. The liver was dark-green and soft, and there were, macroscopically, no fibrous strands seen in it. It showed no signs of gross stagnation of bile. Microscopically there were seen in the central portions of the lobules disintegration, phagocytosis of bile, infiltration with leucocytes, but no inflammation of the ducts. The cause of the jaundice in these cases was discussed and Eppinger's theory of a biliary thrombosis with rupture of the bile capillaries and extravasation of bile into the blood was said to be the most likely one. Dr. Osler referred to the presence of bile in the stools of these patients in spite of the intense jaundice which might be more marked than in any condition except malignant disease.

Crossed Dissociated Sensory Paralysis.—Dr. Thomas exhibited a case showing this dissociated paralysis with a lesion in the medulla. The patient was a man, aged forty-eight years, of good family and personal history, who, from September, 1904, on had been suffering with attacks of vertigo every ten or twelve days. The attacks lasted fifteen to twenty minutes, and were accompanied by pain in the left side of nose and face, numbness in the side and a sense of "everything going round." Between attacks he was well. On October 2 he had an attack similar to the others, but more severe; and from this he never recovered. His voice became hoarse, a disagreeable feeling became almost constant in the left side of the face, there was numbness of the left side and continuous vertigo. On occasions there was perspiring of the right side of the face. There was no nystagmus. The seventh and eighth cranial nerves were normal, and there was no change in the mouth. Throughout the distribution of the fifth cranial nerve on the left side there were analgesia and thermanesthesia. The pharyngeal reflex was absent, there was paralysis of the left side of the larynx, the palate fell slightly to the left, and the tongue was protruded slightly to the right. Sensory changes in the right arm were the same as those on the left side of the face. The muscular strength was good, but the left hand and leg were unsteady. The deep reflexes were normal on both sides. On the right side the abdominal reflex was active; on the left it was absent. There was unilateral ataxia of the left foot. The patient had been in the hospital two weeks, and was much improved. The diagnosis was of a lesion in the medulla with disturbance of the sensory fibers passing to the cerebellum in the region of the restiform body. The lesion must have been above the decussation of the fibers of the fifth nerve, and below the decussation of the sensory nerves of the body. These data, to-

gether with the involvement of the tenth nerve and the escape of the seventh and twelfth located the lesion exactly. The important features of a similar case in the Johns Hopkins Hospital some years ago, were described by Dr. Thomas. This patient presented a symptom-complex much like, though not identical with, the one reported. He died suddenly, and at autopsy there was found a thrombus of the right vertebral with the posterior, inferior, cerebellar artery. Several similar cases have been described in the literature. In Wallenberg's patient (reported in *Deutsche Zeitschrift für Nervenheilkunde*) diagnosis of thrombosis of posterior-inferior cerebellar artery was made during life, and this condition was found at autopsy. In Monakow's case, however, the same diagnosis was made from a similar symptom-complex; but at autopsy an aneurism of the vertebral artery was found causing pressure destruction of the cerebellum. The prognosis in such conditions is good, for partial recovery, but certain features usually persist.

Situs Transversus and Atresia of the Pylorus.—This condition was briefly reviewed by Dr. Little in connection with a case reported. The monster had been born of a mother aged thirty-three years, who had been admitted to the hospital during the seventh month of her pregnancy. The child when born weighed 2,350 grams. Hydramnios complicated the delivery. The child's head was about normal, but it had the typical "old-man" appearance. Shortly after birth it vomited 1½ pints of amniotic fluid, and the following day passed some meconium. Feeding was attempted with modified milk, but vomiting occurred approximately after every second feeding. On the fifth day mother's milk was given, and subsequent gastric lavage showed that the food had not passed out of the stomach. There was bile in the stools. Operation was decided on, and a posterior gastro-enterostomy done. The patient died next morning. At autopsy complete situs transversus was found, the right lung had but one lobe, there was no connection at all between stomach and duodenum, and the latter began in a pouch containing the ampulla of Vater. The etiology of this condition (atresia of the pylorus) is not clear. Error in development, volvulus, and local fetal, luetic peritonitis have been suggested as the cause. Ahlfeld thought it was due to the persistence of the omphalomesenteric duct, while Küttner believed in an arteritis and thrombosis of the intestinal arteries as the origin of the deformity. A congenital malformation of the vessels was found in this case—the gastric and splenic arteries anastomosing and short-circuiting the pancreatico-duodenal branches of the hepatic.

MEDICAL AND CHIRURGICAL SOCIETY OF MARYLAND.

Stated Meeting, held November 4, 1904.

SECTION ON CLINICAL MEDICINE AND SURGERY.

A Case of Traumatic Asphyxia.—Dr. Randolph Winslow reported a case of traumatic asphyxia. This condition was recently reviewed by Beach and Cobb in the *Annals of Surgery*, and at that time only seven cases (including that of the author's) had been reported. The accident always results from the application of a compressing force, kept up for some time and sufficient to prevent breathing. The essential feature is the remarkable blue discoloration of face and neck. In some cases the extremities have been

involved. The patient reported was a man, aged twenty-two years, who had been caught between the top of an elevator and the roof of the shaft. He had been kept in this position by the ascending elevator for some moments, the force, which doubled his body up like a jack-knife, being sufficient to produce a laceration around the rectum from the heel of the shoe. The patient did not lose consciousness, but suffered great agony, and felt "as if he would burst." His pulse, when he was first seen, was 120, respiration 40, temperature normal. There was bloody expectoration and epistaxis; and the fourth, fifth and sixth ribs on the left side were fractured. Subcutaneous emphysema was present; but there was no blood in the urine, which had to be drawn with a catheter. The pupils were equal, and reacted to light, there was conjunctival ecchymosis. Sight and hearing were good. The most remarkable feature in the examination was the discoloration. The head, face and neck to the level of the collar were dark blue, the charge being a punctiform one, like the scarlatina rash. Pressure caused no disappearance of the "cyanosis." The patient was shocked, and was practically untreated, except for absolute rest and the usual attention to his other injuries. On the day after admission his temperature rose to 100.8° F., but with this exception, convalescence was uneventful. He was out of bed on the eighth day, and four days later left the hospital, though the discoloration had not then entirely left.

Pathology of the Condition.—Dr. Winslow said that this condition was not infrequently seen in patients dead from compression, but it was extremely rare in the living. Previous to the work of Beach and Cobb it had been thought to be a cutaneous hemorrhage; but these authors showed, by histological examination, that no extravasation occurred, the essential charge being a dilation of the capillaries. This observation was confirmed by Dr. Winslow. A piece of excised skin having been examined after hardening in Zenker's fluid and staining with hemotoxylin and eosin and with Van Gieson's stain. Distention of the capillaries, absence of extravasation of blood and a practically normal skin were found.

The Treatment of the Stump of the Appendix.—This subject was discussed by Dr. H. A. Kelly. The development of appendicitis in the history of surgery had, he said, been associated with the operative treatment of appendicitis. Nowhere else in surgery was more clearly shown how much may be accomplished in a small field by careful work. The development of the operation was as good an example as could be had of the evolution of operative technique, several workers each adding a small improvement until the procedure had become satisfactory to all. After the recognition of appendicitis as a clinical entity seventy-five years had occurred before it was intelligently treated by the surgeon. There were two reasons for this. One was the invention of the name "typhlitis," which had resulted in a false idea of the pathology of the condition, and the other was the authority of Dupuytren, who opposed advance in this direction. Clear light first began to dawn when Reginald Fitz published his classical paper; and the subject was soon cleared up by the work of Morton, Sands, Parker, McBurney, Bull, Weir, Deaver and Senn. Krönlein in 1844 was the first to remove an appendix. He opened a pericecal abscess, ligated and amputated the appendix, and closed without drainage. The

patient died. Hall, at the Roosevelt Hospital in 1886, ligated and amputated an appendix and drained the abdomen successfully; but Morton in 1887 was the first to operate on a case of appendicitis, in which a definite diagnosis had been previously made. Ligation and amputation with evisceration of the abscess and drainage resulted in recovery. In 1889 Treves first sutured the peritoneum, and Senn, in the same year, first covered the stump with peritoneum. The cuff operation was first described by Fowler, and Dawbarn was the first to advise stretching of the lumen and invagination of the organ into the cecum. Other methods which had been described were: Edebohl's (invagination of the whole appendix which is left to slough into the cecum), Deaver's (amputation in the cecum), and the method of Halsted and Finney (application of three clamps, withdrawal of middle clamp and amputation at that point). The danger in any method was said to be that of contamination of the surrounding peritoneum, and if this risk could be eliminated an ideal procedure would result. Donnes's electrothermic cautery would accomplish this purpose, but the great objection to its use was the necessity for expensive and elaborate electrical apparatus.

Exhibition of a New Instrument for Dealing with the Appendix Stump.—A new instrument was shown and its application in the treatment of the stump of the appendix demonstrated by operations on pathological material. The base of the appendix was caught between the blades of a powerful crushing forceps, which were provided with beveled edges so arranged that the point of an actual cautery could rest on them and convert them into cooking irons. The appendix was then amputated by the cautery, and its stump thoroughly cauterized. The blades of the crushing forceps were then heated slowly by the cautery, the tissues which had been crushed between them being in this way thoroughly cooked and sterilized. When the forceps was removed a thin, transparent, flat area was seen representing the stump of the appendix, which had been thoroughly crushed, completely sterilized and absolutely sealed. A seroserosal suture was then placed in the ordinary way.

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held October 8, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

SYMPOSIUM ON CHRONIC BRIGHT'S DISEASE.

The Etiology and Diagnosis.—This part of the subject was discussed by Dr. Samuel Wolfe, who stated that one usually has as an underlying cause, either inflammation or degeneration, probably both, and that it was a mooted question as to whether there was ever degeneration without inflammation. He referred to the fact that in many cases back of the inflammation and degeneration there was a toxin or specific infection, and cited among the causative factors, malaria, tuberculosis, amyloid degeneration, syphilis, exposure, excessive use of alcohol, particularly beer. The disease is more frequent in males than in females and generally occurs in early life, before the fortieth year. He confined his remarks to the chronic parenchymatous variety, and stated that the condition occasionally was associated with a slight form of pyemia, especially after pregnancy, or with anemia. The urine is scanty with a specific

gravity normal or slightly higher; a low specific gravity being indicative of the interstitial variety. The histological elements are more scanty in the chronic interstitial variety, and the edema is more marked. He referred to the diagnostic value of accentuation of the aortic sound, which, while not indicative of any specific form of Bright's disease, was very suggestive of renal trouble. Careful chemical and microscopical study of the urine; the condition of the heart; and the slowly progressive blood deterioration must remain the cardinal points in the diagnosis.

Prognosis and Treatment of Chronic Nephritis.—

This was read by Dr. A. C. Morgan, in which he stated that, as it was impossible to repair the damage done to the kidney, the treatment must necessarily be of an inhibitory character. The prognosis, he stated, was difficult to determine owing to the uncertain time the disease has existed, and the complications which may arise, the younger the patient the more serious is the prognosis, the variety in such cases being usually the parenchymatous. He referred to the fact that death was not always caused by the disease alone, and cited as chief among the terminal complications, pneumonias, particularly bronchopneumonia, grippe, cerebral hemorrhage, cardiac dilatation, and inflammation of the serous membranes, pericarditis being the gravest of the latter condition. In uremia, accompanied by convulsions, he stated, the prognosis was grave. In the treatment, especial attention should be directed to the removal of the cause, and much can be accomplished by the treatment of the patient as well as the disease. Careful attention should be given to the general condition and hygiene, flannels should be worn the year round, in order to stimulate the activity of the skin, and, if possible, the winter passed in a warm, equable climate. Mental labor must be cut down and exposure avoided. Cold bathing should be avoided, and benefit is derived from massage, rest in bed for ten hours out of twenty-four, or the entire time when the paroxysms are severe; malt liquors and spirits should be avoided and carbonated waters used freely. Nitrogenous foods should be reduced and milk may form an important part in the dietary. The treatment should be directed to arresting the sclerotic or degenerative changes and overcoming the anemia, for the former of which may be used potassium iodide, hydriodic acid and mercuric chloride and for the latter, arsenic and iron. He then discussed, in detail, the treatment of high tension, low tension, effusions, drowsiness, dropsy, asthma, edema of the glottis, epistaxis, obstinate vomiting and diarrhea, pruritis, palpitation, and uremia, for the latter condition venesection being recommended. Chloroform, chloral and the bromides, and in the parenchymatous variety morphine in good doses may be used, but in the interstitial form should be used but sparingly, although the author cited a case in which for five years he had employed morphine hypodermically for the asthma which had resisted all other measures, followed by pilocarpine the morning following without any untoward results.

Dr. James Tyson, in the discussion, said that while it had been stated that the pathology of chronic nephritis was so indefinite that no treatment could be based on it, he felt that this was going too far. He stated that there was no known agent by which the restoration of the structure of the kidney could be accomplished, and that the treatment naturally divided itself into two parts: (1) The placing of the patient in a condition which is most favorable for nature to assert herself and favor change in the structure, if possible, and (2) the treatment of the symptoms. He referred to the

former method of the enormous use of drugs to diminish the albuminuria, and stated that there was no remedy which would prevent the transudation of albumin when conditions favor it. He recommended rest in bed for a few hours in the middle of the day in the mild cases, and longer if the case was severe. He believed that the distinctions between white and red meats were unfounded, and recommended that, instead of prohibiting red meats, the moderate use of all meats and, except in the acute exacerbations, a moderate quantity may be allowed. Climatic treatment is of value and the winters, is possible, should be passed in a warm climate. The treatment of the symptoms should be directed to the diminution of arterial tension. In the severer forms, rest in bed is absolutely necessary; massage is also of value. He felt that the general practitioners frequently made a mistake in advising the too free use of water. Puncture under aseptic precautions was recommended in dropsical cases, and the danger from sepsis was expressed as practically nil. Venesection and intravenous injections of normal salt solution was recommended in cases of uremia. In regard to the iodide of potassium, he stated that if it can be used without producing unpleasant symptoms, it may be of value, but the bichloride of mercury he did not look upon as of any use.

Dr. Wendell Reber stated, that the ophthalmological changes were of two kinds, degenerative and hemorrhagic; the inflammatory changes being most likely to occur in the acute forms, while in the chronic conditions, there are more likely to be degenerative changes. He referred to the work of Dodd, who some years ago collected 700 or 800 cases and submitted statistics showing the value of these observations in computing the probable duration of life. He referred to the observation of a number of cases made by himself at Blockley, and stated that while about 45 per cent. showed albuminuria, but very few revealed eye-ground changes, and this had been further confirmed by the observations he had made at the Polyclinic Hospital. He reported the case of a male, thirty-two years of age, who had had albuminuria for at least twelve years, although he has been giving careful attention to hygiene and his habits are almost ideal. At one time he was able to find a few fine yellow spots, but they disappeared and have not recurred. He also referred to another case which had been watched closely for a long time, and in which there were no changes observed until shortly before death, when violent degenerative changes occurred.

Dr. William H. Good referred to the fact that according to physiological chemistry, the osmotic pressure of fluids depended not so much upon the kind of molecules present, but upon their number, and felt that perhaps the same line of reasoning would explain the effect of large quantities of proteids, by increasing the osmotic pressure of the blood, which must be gotten rid of through the kidneys, and also discussed the question as to whether this action was due to a chemical substance or to the back of some internal chemical secretion.

Dr. W. Hershey Thomas referred to the various surgical procedures, which had been resorted to for the relief of this condition, and stated that, here as elsewhere, much more valuable information could be learned regarding the pathology of the condition during operation than after death. After which he referred to the operations by Edebohls, Harrison, Israel, Guiteras, Van Cott and others, giving in detail the different operations performed by operators and the results.

BOOK REVIEWS.

CHINESE MADE EASY. By WALTER BROOKS BROWNER and FUNG YUET MOW. The Macmillan Company, New York.

"AS HARD AS CHINESE" has almost passed into a proverb, therefore it is with something like a gasp of astonishment that we first catch a glimpse of the title of "Chinese Made Easy." Yet here it is, a rather bulky volume to be sure, but cheerfully bound in red and gold, so alluring in appearance that one feels eager to open the gay covers at once. Following true Chinese order the reader must turn to what would be the last page of an American book, and here he encounters an *Introduction* by Dr. Herbert A. Giles, of the University of Cambridge, a scholar of no small repute, who is himself the author of several works on the study of Chinese. Thereafter follows the *Preface* where the authors, Dr. Walter Brooks Browner, of Columbia University, and Fung Yuet Mow, a Chinese city missionary in New York, briefly set forth the motives which inspired them to present this work to the public, and point out the advantages of their method of presentation over those usually employed in teaching Chinese to foreigners.

The greatest innovation is the abandoning of the usual system of "tones" or "breathings," that is, the placing of circumflex accents at the corners of certain Chinese characters, in the effort to distinguish the same character as applied to different things. This method, the authors claim, is artificial, unnecessary and never used by the Chinese themselves, as they are able to distinguish the same character used in different contexts, exactly as we recognize the difference between the English words *pain* and *pain*, identical in sound, but varied in meaning. This "tone" system has always been a great obstacle in the path of all European and American students of Chinese, and its removal does much to make the language appear much more "easy" than has ever before been the case.

The authors also lay stress upon the fact that Chinese, although originally a monosyllabic tongue, now consists largely of compound words, and these compounds may be readily analyzed into their original component parts. Chinese has no alphabet, as has been frequently noted, but it does possess 214 radicals or "root words," from which all the characters used in the written language are made up. The book sets forth a rational method of analyzing and understanding the very numerous characters used in writing Chinese, and supplies a vocabulary of words ordinarily employed in writing and speaking, together with instructions for using a Chinese dictionary. These are only a few of its many features of interest, but will serve to point out the entirely new path which the authors have opened up to the student. The book deals with only one of the main dialects of China—that is, the Cantonese. This particular dialect was selected on account of the fact that the greater part of the Chinese now resident in this country are natives of the Canton provinces. The written language is the same all over the Empire.

"Chinese Made Easy" bears throughout the evidence of the most detailed and painstaking labor, and is certainly a very noteworthy addition to the existing text-books of that obscure and formidable language. Yet, while we join with the authors in the hope that a day may come "when a knowledge of the Chinese language will be as common an accomplishment as a knowledge of German, French, Spanish or Italian is to-day," we cannot help fearing that that day is still

some time in advance. But to those who have an urgent desire to add a knowledge of Chinese to the list of their linguistic accomplishments, "Chinese Made Easy" may be most heartily recommended as offering by far the most simple, practical and "common-sense" method of acquiring this language which has yet been presented to the American student.

LIGHT ENERGY. Its Physics, Physiological Action and Therapeutic Applications. By MARGARET A. CLEAVES, M.D. Rebman Company, New York.

SO MUCH has been heard of the action of light in medicine in recent years that a book like the present, which contains all the scientific principles of light action, will fill a definite want. The book is excellent in make-up, in matter and in the form in which it has been cast. The first 130 pages contain the Physics of Light, then 300 pages are devoted to the biological effects of light in its various available forms. Light exclusion and its beneficial effects in pathological conditions take up two chapters, some 40 pages. Various forms of radiation, including the N-rays radium and fluorescence are treated, and, finally, the pathological effects of light. In readily available form the book contains all the physician may desire to know about the use of light in medicine. In its thoroughness the work reminds us more of some of the foreign monographs than what is usual in this country. We are glad to welcome it as an addition to American medical literature.

SURGICAL TREATMENT OF BRIGHT'S DISEASE. By GEORGE M. EDEBOHLS. Frank F. Lisecki, New York.

It is certainly gratifying to have from the pen of the surgeon, who has done most in America to popularize the surgical treatment of chronic nephritis, a concise and lengthy monogram on the subject. Two-fifths of this book, which comprises over 300 pages, are devoted to the author's contributions to renal decortication, which are arranged in chronological order of publication. The remaining three-fifths are entirely new matter, never before published. This deals almost entirely with the results. Not an insignificant number of pages of this interesting volume are consumed in discussing the question of priority.

The histories of seventy-two cases are given in full and are followed by a very careful analysis. It is almost needless to state that the author's conclusions are to the effect that decapsulation is essentially the method of treating chronic nephritis. Whatever may be the opinion of the surgical profession at large, the advent of this book must be looked upon as a justification of the author's well-known views upon the subject. One closes it with the conviction that whether or not the author's interpretation of the manner in which he obtains these results, is correct or incorrect, the improvement noted in so many cases, whatever its source, justifies, under favorable conditions, the employment of surgical treatment for chronic nephritis.

BEAUTY THROUGH HYGIENE. Common Sense Ways to Health for Girls. By EMMA E. WALKER, M.D. A. S. Barnes & Company, New York.

THE series of which this little work is one includes a number of books of great practical interest to the modern woman, but none, we venture to say, that is written with more practical directness, with less waste of words, or with more careful attention to what is absolutely necessary for an easy understanding of the matter in hand than the present volume. All the details of the relations of health and beauty are simply

but thoroughly treated. The necessity for consulting a physician rather than take drugs by friendly or advertisers' suggestions is pointed out, yet if the book has a fault, it is that perhaps there are more drug hints in it than is quite suitable for the general public, especially as it is likely to be used mainly by young people.

EPITOME OF NERVOUS AND MENTAL DISEASES. By JOSEPH DARWIN NAGEL, M.D. Lea Brothers & Company, Philadelphia and New York.

Nervous and Mental Diseases are apt to be the bête noir of the medical student and the young general practitioner of medicine. If approached with confidence and systematic method they prove interestingly problematic instead of hopelessly complex. This little volume contains just the information likely to start the seeker on the road to a definite knowledge of one of the most important subjects in modern medicine. In spite of its small size it is quite complete and satisfactory in detail and contains some helpful illustrations.

THE PRINCIPLES OF HYGIENE. By D. H. BERGEY, A.M., M.D., Assistant Professor of Bacteriology, University of Pennsylvania. Second Edition. W. B. Saunders & Company, New York, Philadelphia, London.

DR. BERGEY's book, in its second edition, contains some excellent additions. Now that animal parasites have become so prominent a feature even of life in the United States, the chapters on these pests and especially the suggestions as to prophylaxis, are sure to be valuable. The paragraphs on fleas show how this little insect is coming to deserve even serious medical consideration. Army and navy hygiene are subjects of special import now, and are treated correspondingly. In general, it may be said that Dr. Bergey's book will deserve in this edition the same popularity that exhausted the last edition in about two years.

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH OF THE CITY OF NEW YORK for the year ending December 31, 1902. Martin B. Brown Company, New York (Health Department Publication).

HEALTH departments of smaller cities and towns not sure of what they should do to improve the health of their communities will find an ample field of suggestion in this volume. The questions of milk, hygiene, of care for the water supply, of the smoke nuisance, and other specialties, are treated in this volume, as well as the regular data of the health report for the year.

THE SURGERY OF THE HEART AND LUNGS. By BENJAMIN M. RICKETTS, Ph.B., M.D. A History and Résumé of Surgical Conditions found therein and Experimental and Clinical Research in Man and Lower Animals, with Reference to Pneumonotomy, Pneumonectomy, etc. The Grafton Press, New York.

THE first impression one receives on opening this rather large volume of 500 pages, is that the work has been very freely illustrated. Many of these illustrations are microphotographs, the rest, almost without exception, are photographs of gross laboratory specimens. One of the most valuable parts of this work will be found in the chapter on "Practical Hints and Theoretical Considerations." These are deduced and suggested by the author's experiments on dogs, fifty of which are fully tabulated and described in an appendix. These hints cannot fail to be of great value, not alone to practical surgeons working on the human being and to experimenters, seeking to corroborate the

author's findings or to further the interests of the surgery of the heart and lungs, but to all laboratory workers as well, who are engaged in any form of research surgery on the vertebrates. The book is, therefore, to be cordially recommended to all laboratories of surgical research. The very full bibliography attached to each chapter is in itself of the very greatest use and value to all.

An interesting feature of the book is the table of terminologies, which is full and much to the point. Some such table might well be duplicated, to the manifest advantage of students, in text-books on general surgery. A commendable effort evidenced throughout the book to render the work comparative as well as human, in conjunction with the special characteristics already noted, justify the expression of a belief that the book, though not destined for wide circulation, will be welcomed and appreciated in certain rather limited circles.

A TEXT-BOOK OF PHYSIOLOGY. By ISAAC OTT, A.M., M.D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia. F. A. Davis Company, Philadelphia.

IN his preface the author states that his book is not a treatise but an elementary work. No attempt has been made to describe laboratory technic or to discuss electro-physiology, a subject which occupies too much space in many current works, and no time is wasted in reviewing the literature of doubtful hypotheses. The chapters on the circulation and blood are especially good, and are considered from a practical clinical standpoint. One might wish that certain subjects were treated a little more fully for examination purposes, but full references are given for consultation. The illustrations are clean cut and intelligible, the typography is good and the book deserves a wide popularity, both in medical schools and among the shelves of physicians' libraries.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY, Fifteenth Session, held at Washington, D. C., 1903, edited by WALTER LESTER CARR, M.D. Reprinted from *Archives of Pediatrics*, 1903.

AS THE membership of this society includes the leading pediatricists of this country and Canada, the papers here published well represent American thought in relation to children's diseases. It would be too much to attempt to indicate all the papers and their authors, but, selecting at random to indicate the general trend of the articles, we might mention Edsall's Study of Still's Type of Chronic Polyarthritis; Holt's on Abscess of Lung following Acute Pneumonia; Shaw's Determination of Fat and Total Solids in Milk, and other papers on Infant-Feeding and Milk; several papers on Affections of the New-born by Wilson, Snow, Hamill and Nicholson; and a discussion on the bacillus of Shiga by Flexner, Park, Koplik, Holt, Knox and Booker.

ESSENTIALS OF MEDICAL CHEMISTRY. By LAWRENCE WOLFF. Sixth Edition, revised by A. Ferree Witmer. W. B. Saunders & Co., New York, Philadelphia and London.

THIS new edition needs no extensive review. The work has shown itself to be useful to students. While opinions may differ as to methods of imparting this type of knowledge, we agree that for the type of work it is one of the best of its kind. It is conveniently arranged and most of the new matter of recent years is included.